

# AMERICAN RAILROAD JOURNAL,

AND

## IRON MANUFACTURER'S AND MINING GAZETTE.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 48 SOUTH THIRD STREET, PHILADELPHIA, AT FIVE DOLLARS A YEAR, IN ADVANCE.

SECOND QUARTO SERIES, VOL. IV., No. 48.] SATURDAY, NOVEMBER 25, 1848 [WHOLE No. 559 Vol. XXI.]

### PRINCIPAL CONTENTS.

Raising Coals by Steam.....	753
Iron Buildings in New York.....	753
Morse's Claim to the Telegraph.....	753
Rensselaer and Saratoga Railroad.....	754
Long Island Railroad.....	754
Pennsylvania Coal Trade.....	754
Vermont Central Railroad.....	754
Treatment of Ores.....	757
The City of Cairo—Illinois—The Central Illi- nois Railroad.....	759
Richie's Improvements in Locomotive Engines.....	760
Tubular Bridges—Conway and Britannia.....	761

### AMERICAN RAILROAD JOURNAL.

PUBLISHED AT 48 S. THIRD ST., PHILADELPHIA.

Saturday, November, 25, 1848.

#### Raising Coals by Steam.

At the "Hetton Colliery" an engine is used for drawing coal to the surface from a depth of about 490 yards, which raised in 45 seconds no less than 4800 pounds, being two corves, each holding thirty bushels, calculating the weight per bushel at 30 lbs.—this is exclusive of the weight of the corves, rope, etc. The rope employed is 8 to 9 inches wide, and 1½ to 2 inches in thickness; it will thus be seen that upwards of 2 tons weight is raised in three-quarters of a minute, and allowing 15 seconds for change, this would give an output of no less than 1840 tons from one pit in the 12 hours, from a depth of no less than 245 fms. The advantages alone, in a pecuniary point of view, must be at once apparent, from the application of machinery, and the rapid progress made in the increase of power acquired, and the economy of time and money.

### TO CONTRACTORS.

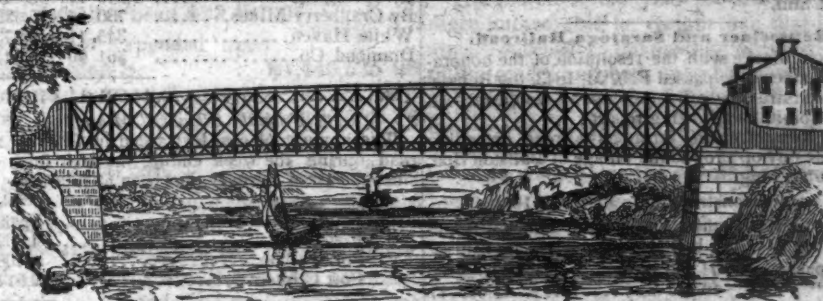
OFFICE NASHVILLE & CHATTANOOGA R.R. Co. }  
Nashville, 9th November, 1848. }

**PROPOSALS WILL BE RECEIVED AT** this office on 20th December next, for the Graduation and Masonry of forty miles of road, viz: twenty miles next to Nashville, ten miles crossing the Barran fork of Duck river in Bedford county, Tennessee, and ten miles on the northwest side of Tennessee river, in Jackson county, Alabama.

Profiles and plans may be seen at this office after 12th December. By order of the board.

C. F. M. GARNETT,  
Chief Engineer.

ON B. Twenty-five miles of road (including the Tunnel,) and six miles heavy mountain work are under contract. Seven Hundred Laborers are wanted by the Contractors.



### RIDER'S PATENT IRON BRIDGE.

THE RIDER IRON BRIDGE having now been fully tested on the Harlem Railroad, by constant use for about eighteen months, and found to answer the full expectations of its most sanguine friends, is now offered to the public with the utmost confidence as to its great utility over any other Bridge now known.

The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

THE RIDER IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Rail Road or other purposes, made under the above Patent, at short notice, and at prices far more economical than the best wood structure, and on certain conditions, the first cost may be made the same as wood.

Models, and pamphlets giving full descriptions of the Rider Bridge, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 74 BROADWAY, up stairs, or of W. RIDER & BROTHERS, 58 Liberty Street, where terms of contract will be made known, and where orders are solicited.

November 25, 1848.

M. M. WHITE,  
Agent for the Company.

#### Long and High Viaduct.

"The ceremony of keying the last arch of the Dee viaduct," says the Shropshire Conservative, "took place on the 28th August, in the presence of the directors and their friends. The length of this unrivalled viaduct is 1,508 feet, the height 147 feet, the number of arches 19, and the span of each arch 60 feet."

#### Iron Buildings in New York.

We recently discovered a curiosity in the way of building stores and manufactories in New York.

There is now being erected on the corner of Duane and Centre streets a building of — by — feet, and four stories high, for a machine shop, which, above the foundation, is to be entirely of iron, except the beams and floors. The gentleman who has planned and is erecting this building, has formed a set of moulds from which every part is to be cast, so as to match its fellow, and when each piece is put successively in its place, it is secured by bolts having a screw and nut to fit, which, when turned up firmly, make the whole superstructure exceeding firm and substantial.

As this plan is in accordance with views long entertained by us, we shall watch and report its progress with some interest—and hope to give full details of its construction.

#### Morse's Claim to the Telegraph.

Mr. Morse's claim to the telegraph which bears his name, and will bear it forever, is vindicated in an able article by the New York Observer, which sets forth in clear language the point in dispute.—The editor says:

"Mr. Morse claims to be the inventor of the application of electro-magnetism to the making of characters, marks, letters, or anything by which intelligence may be transmitted over wires. It is this application of electro-magnetism which is secured to him; besides this he has invented various machinery to be employed in the work, all of which is also secured by patent; but the main thing which he claims is the application of a power to the production of a new result; this application is the invention—the machinery is subordinate; once invent the thing, and it is comparatively easy after it has been done, to make another, or a hundred other machines







**2. The White River Division.**—This division extends from a point opposite West Lebanon, N. H., to Northfield—52½ miles. It has been graded, and the rails laid, so that the road is in running order to Roxbury, within 10 miles of the depot at Northfield. The road will be in operation to the summit this week, and to Northfield within the ensuing month. The roadbed is of excellent materials, and has been in good part gravelled. The masonry and bridges, also, upon this, as upon the Connecticut river division, are of the most substantial kind; and the road, so far as completed, is, in the opinion of competent judges, among the best ever constructed in this country.

Depots of suitable size, handsome and uniform in appearance, and conveniently arranged, have been contracted for and partly constructed. Those at Bethel, Randolph and Roxbury have been built—the two first costing \$1100 each, and the last named 600. The depot at Northfield, of which we shall more particularly speak, is nearly completed. Depots have been contracted for at the following places: White River Village, at \$1200, and Royalton and North Royalton at 1150 each. The one at Royalton, is wholly built by the liberality of citizens of that place, and about half of that at North Royalton. Other depots required will soon be contracted for at similar prices.

Freight houses of a cheap construction and uniform appearance, have been or will be built at these places, and at other points required. Three water stations, of the most approved kind, have already been erected; and all of these buildings it is believed will be entirely satisfactory to the stockholders as to economy, and to the public for their arrangements and appearance.

After long and careful deliberation and examination, the board decided to locate the engine house and machine shop at Northfield. From the experience of other roads and the best information they could obtain, they came to the conclusion that these arrangements should be located near the centre of a road of this length, 115 miles. The distance would be too great for a locomotive to be taken from end to end for repairs or inspection; there must therefore be either two machine shops, one at each end of the road, or one near the centre—and the nearer the better. Northfield is near the centre, and also is on the northern side of the summit, at the commencement of a section of five miles of forty feet grade, where locomotives will be ready to assist the heavy trains coming from the north loaded with produce. It is also near the summit, where fall the heavy snows of winter, and the engines at this station will be at hand always to overcome this difficulty, the only one of the kind upon the whole line.

The fixing upon that place for the machine shop and engine house rendered it necessary to provide suitable rooms for the accommodation of passengers while the engines are being changed, and also such as will be proper for the officers, clerks, and business of the road. A. B. Young, Esq., was invited to furnish designs for buildings suitable for such

a road, which were approved of by the directors, and the president was instructed to have the buildings in readiness at the opening of the road to Northfield. The depot is nearly finished, and must be considered creditable to the architect who planned it and to the company which has caused its erection; and when it is understood that this building has cost only \$11,571 22, it is believed that this expenditure will be entirely satisfactory to the stockholders.

The machine shop and engine house are upon the most approved plans, well arranged and substantially built, and thus far at a very low cost, compared with like structures upon other roads. Mr. Young, having this day examined, reports that the amount already expended on these buildings is \$8000, and the sum required for completion will not exceed \$11,000, making the whole cost 19,000.

The total expenditure for depots, freight houses, engine house, and machine shop, up to this date, has been \$23,481 91.

The amount expended upon this division is, \$1,445,535 26  
The estimated cost of completing it is 126,303 16

Total cost, 1,571,838 42  
Making the cost \$29775 per mile, including furniture.

**3. Winooski Division.**—This division extends from Northfield to Burlington, 50 miles. The amount expended up to August 1st, was \$514,321 42. The estimated cost of putting the road in running order to Montpelier is about \$150,000, and from Montpelier to Waterbury is 180,000. Important changes of the line between Waterbury and Burlington, promising to save a heavy expenditure, have been recommended by the engineer, the estimates for which have not been completed. The directors are therefore unable to show, as they have desired to do, the probable total cost of the whole road, in the mode adopted as to the first divisions.

The sum of \$214,321 42 expended on the Winooski division, between Northfield and Burlington, is exclusive of the proportion of incidental expenses incurred thereon; and the sum of one million to finish this division will probably approximate closely to the result.

This road, it is believed, will compare favorably with any other, thus far, both in point of cost and the character of the work: and judging from what has already been done upon the remaining portion of the line from Northfield to Burlington, the board entertains a confident expectation that the whole road will be completed at a cost within the sum of about \$31,000 per mile. Such also is the opinion of the engineer.

It will be observed that a comparatively small sum is required to place the road in running order as far as Montpelier, and the reaching of that point must be considered of very great importance to the future income of the road. Nothing short of reaching Lake Champlain, however, can realize the expectations of the friends of this enterprise, and your directors therefore deem it to be for the interest of the stockholders to press forward

the whole work to completion as fast as the means of the company will permit.

The road, from White River village to Bethel, 25 miles, was opened for use on the 26th of June last. The gross receipts for passengers and freight from that date to the 20th inst., will appear from the following statement:

**Weekly Receipts of Vermont Central Railroad, 1848.**

	Passengers.	Freight.	Total.
June 26th to June 30th...	\$200 93		\$200 93
(Week ending.)			
July 8—(excursion 4th)...	615 93	\$132 49	748 42
15 .....	447 78	267 39	715 10
23 .....	404 63	481 07	885 70
29 .....	541 87	461 66	1003 53
Aug. 5 .....	651 79	456 17	1007 96
12 .....	757 79	303 00	1140 79
19 .....	867 78	308 00	1174 78
26 .....	987 39	395 00	1382 39
	5475 88	2883 17	8359 59

No season of the year probably could be more unfavorable for freight than that immediately succeeding the opening of this division of the road; and both as to business and travel, the present season fall short of any other for the last ten years. These facts, and the steady and rapid increase of receipts from week to week since the opening of the road, seem to warrant us for the belief that the results thus far even exceed the expectations of its most sanguine friends.

Finding upon your stock books reliable subscriptions to the amount of two millions of dollars, upon which \$1,636,117 50 has been paid, the whole road was put under contract upon terms which time has shown to be more favorable than those of any other road then or since being constructed. This amount of capital was at the time deemed an ample guaranty for that step, and it was taken by the board in a confident expectation that the stockholders and the public would not hesitate to furnish all additional means required to carry through so important an enterprise. This expectation has been disappointed by an unusual depression in the financial affairs of the country, the injurious effects of which have fallen upon this enterprise, in common with all others of a like character, and compelled the board either to suspend operations, or resort to such measures as the practice of other corporations in like circumstances warrants for raising the funds required. Your board chose the last alternative, and in May last issued stock at \$75 per share, not doubting that it would be taken and paid so far as to warrant a continuance of the work. The work was therefore continued until the first of the present month, when it was found that funds were required not only to proceed farther with the work, but to discharge obligations already incurred. Other roads were unfortunately in the same condition, and were forced to issue stock or sell bonds at a still lower rate. Under these circumstances it was deemed necessary to issue stock at a rate which would secure the capital required and an uninterrupted prosecution of the work. This step seemed to be required not only by the interest of those stockholders who are ready to make further investments, but of all



others, the security and value of whose stock is dependant upon the completion and successful operation of the road. Looking to the cost of the road and the business which it will command, immediately from the section through which it passes, and ultimately from its numerous railway connections with a vastly larger territory, your board renewedly expresses the conviction that the investment will be a highly valuable one, and commends the enterprise to your continued support. All which is respectfully submitted.

By order of the board,

CHARLES PAINE, *President.*

Northfield, August 30, 1848.

#### TREASURER'S REPORT.

Vermont Central Railroad Company in Account with Samuel H. Walley, Jr., Treasurer, up to July 1, 1848, exclusive.

Dr	
To bridging and masonry	\$251,685 82
Coupons	5,766 00
Cars	6,370 00
Commissions	7,980 00
Engineering and surveying	63,273 01
Exchange	4 88
Grading	1,109,962 28
Incidental expenses	29,146 25
Superstructure	14,728 43
Incidentals of construction	12,299 67
Depots	16,030 85
Iron	372,156 31
Engines	7,325 00
Interest	95,368 57
Suspense account	14,097 04
Land damages	120,915 62
Notes receivable	74,797 36
Vt. and Canada railroad	1,049 03
Grand Junction railroad	100,000 00
Wharfing, etc.	2,174 91
Fuel	239 08
Winooski turnpike	18,000 00
Bank of Montpelier on deposit	3,997 74
Woodstock bank, do.	1,570 86
Farmers & Mech. bk. of Burlington, do.	852 76
Merchants bank, do.	968 87
C. Paine, president, do.	279 16
	2,331,039 50
Cr.	
By amount received for assessments	1,662,241 50
Bonds payable	22,819 59
Contingent fund	44,341 01
Earnings of Winooski turnpike	3,421 00
Loan of 47	373,300 00
Notes payable	324,886 40
	2,331,039 50

SAMUEL H. WALLEY, JR.,  
Treas. Vt. C. & R. R. Co.

Boston, July 1, 1848.

NORTHFIELD, VT., Aug. 31, 1848.

To the Stockholders of the Vt. Central Railroad Company:

GENTLEMEN:—The annual account which I have submitted gives you a clear statement of the amount of money which has been received from all sources, and the various objects of expenditure to 1st July 1848.

The charge to "Coupons" is for interest paid on the loan of 1847, payable in five years. "Commissions" is the allowance or discount made to purchasers of these bonds. Suspense account is principally the balance due from delinquents upon shares sold by order of the directors, on their account. This item is nominal, inasmuch as those stockholders, generally protected their shares. Among the credits, the item of "Contingent

fund" is for interest passed to the credit of stockholders, but not paid. The amount credited to assessments includes what had been received up to July 1, upon the old stock of one hundred dollars per share, and upon the new stock at seventy-five dollars per share.

If the accounts had been made up to the middle of the present month, they would have shown an increase in amount of assessments received, and of the temporary loan. The amount thus received has been expended in payment of grading, masonry, iron, engines, and passenger and freight cars,—the last three items necessarily involving a large expenditure,—to enable the company to commence running a portion of road on their own account.

The receipts might, therefore, be stated thus:

Old stock, amount paid, bond	\$1,636,117 50
New stock, do.	61,952 27
Bonds, payable in 1852	279,800 00
	\$1,977,869 77
Temporary loan maturing in 1848 and 1849	448,039 28
Due on demand	52,257 35
	\$2,478,166 40

I have heretofore stated that the capital stock was about two millions.

It now appears that there are 19,960 shares of old stock, upon all of which more or less has been paid. The balance unpaid will probably be nearly or quite all realized as the enterprise of building the road approaches its completion, inasmuch as it consists chiefly of shares partly paid, which are issuable to contractors, full paid, as the work progresses.

The general estimate of the cost of the road so far as I have ever been informed, since the building was undertaken upon the thorough plan which the directors adopted for the road, is \$30,000 per mile. It now appears by a careful examination by the chief engineer, that after making ample allowances for furniture, etc., the cost of sixty-seven miles, from Windsor to Northfield, will slightly exceed the estimate; indeed, a large portion of the distance will be completed for a less sum than the average cost.

The year which has just closed has been one of extraordinary financial embarrassments and perplexity. Those who embarked in the enterprise of building this and other long and important roads, were almost to a man actuated either by motives of patriotism, in securing increased trade and commercial prosperity to Boston and vicinity, or by motives of self interest, in their desire to increase this trade and enhance the value of real estate, and render our commerce and navigation more extended and profitable.

The pecuniary reverses and contractions of the last year have operated with great severity upon these classes of our fellow citizens, and of course have for the time materially crippled the unfinished railroads in obtaining the means to push forward these enterprises to the point when they would

begin to pay a profit upon the capital invested. In reference to your road in common with others, these remarks apply with great force. It would have been highly gratifying if we might have struggled on without offering any stock at less than par, until the value of the stock had been tested by the business of the road. This was found to be impracticable, and it is now to be hoped that the stockholders generally will be able to avail themselves of the favorable terms upon which the new stock is offered to them by the directors, and thus average the cost of their stock of seventy-five cents on the dollar.

Forty-two miles of road is to be in running order next week; ten more in a month, and eleven more in the course of the winter, which brings us to Montpelier. This point gained, I have no fears either to the speedy completion of the road to its termination at Burlington, or to the satisfactory report which we shall then receive from week to week, of the increasing amount of the earning of such portion of the road as will be used for the transportation of freight and passengers.

Very respectfully, your obt. servt.,  
SAMUEL H. WALLEY, JR., *Treas.*

#### DIRECTORS AND OFFICERS FOR 1848-9.

*Directors*, Charles Paine, Northfield, Vt.; Robert G. Shaw, Boston, Mass.; John Peck, Burlington, Vt.; Daniel White, Charlestown, Mass.; Isaac Spaulding, Nashua, N. H.; Horatio Adams, Waltham, Mass.; and Isaiah Silver, Montpelier, Vt.

*President*, Charles Paine, Northfield, Vt.  
*Treasurer*, Samuel H. Walley, jr., Roxbury, Mass. [Office 21 Railroad Exchange, Boston.]

*Clerk*, E. P. Walton, jr., Montpelier, Vt.

#### RESOLUTIONS.

On motion of J. A. Vail, Esq., of Montpelier,—

*Resolved*, That under the present situation of the company, we approve of the issue of new stock at \$50 per share on the terms proposed, and recommend to the present stockholders to take the amount to which they are severally entitled.

On motion of president Wheeler of Burlington,—

Whereas the meeting of the stockholders of the Vermont Central railroad company, held at Northfield, Aug. 30, 1848, has called for an unusual examination of the past and present and prospective action of the board of directors, in relation to the general management of the affairs of the corporation, which being attended to, it is

*Resolved*, That the board of directors are entitled to our confidential regard, and our grateful acknowledgement for their past services, and our full confidence in their future labors.

*Resolved*, That Jacob Forster, S. S. Lewis, and Lucius B. Peck, esqs., late directors of this corporation, are entitled to our especial thanks for their disinterested, active and valuable services.

A true copy from the minutes of the stockholder's meeting.

E. P. WALTON, JR., *Clerk.*



The following considerations are deserving of the attention of the stockholders:

The changes of the money market, which have rendered our creation of stock at 50 per cent. both expedient and necessary, forcibly reminds us of the like periods, in their fate, of our most successful railroads.

The New Bedford railroad, the success of which is complete, found itself, while in construction, under the necessity of asking of the state of Massachusetts, the loan of \$100,000 state stock. But for this aid, the creation of new stock, at a very low rate, would naturally have been resorted to.

The Nashua and Lowell railroad, whose dividends have averaged 10 per cent., with a good reserve, was in so bad a position during its construction, that the aid of state stock was deemed by its managers and by the state, an indispensable resource.

We can remember the time when the stock of the following railroads stood thus:

Boston and Lowell	82 per cent.
Boston and Worcester	65
Taunton Branch	60
Boston and Maine	50

And we can also mark the fact, that the stock of each of these railroads, now that they are in operation, maintain its price, considerably above par; and that each of them gives very good dividends.

We can remember the time, when the owners of the land and water power, at Amoskeag, offered in vain \$100,000 bonus to whomever would build the Concord railroad; ay, the Concord railroad, whose stock stands erect at 22 per cent. advance, even in a great scarcity of money: and we can also remember that the owners of the locks and canals at Lowell, actually offered to pay and did pay, from their own funds, 16½ per cent. dividend to the owners of the Boston and Lowell railroad, as an indispensable bonus, to induce them to build the road.

And what shall we say of the Western railroad; of that great work which inspired the Emperor of Russia, in search of the best engineer for its mighty works, to select an American, as consulting engineer, after searching the world over, for the best practical talent? What shall we say of the Western railroad; of that great work, the signal success of which rekindled the hopes of the friends of internal improvement all over the union? What shall we say of this great work? Would it not have been a disgrace to its projectors, and ruin to its stockholders, had not the unshrinking courage of some of its friends and the sagacity of the legislature of Massachusetts sustained it in the time of need? We saw its stock at 40 per cent., and we well remember that fortunes were made by those who had the forecast to come in and purchase, at the low rates: and who thus effected the double purpose of encouraging the work, at the time of its utmost need, and of increasing their own wealth, while promoting the public good.

Away with all gloomy forebodings. The stock of the Vermont Central railroad at 50 per cent. presents the like chance to fortune

as did the stock of the Boston and Maine, Taunton Branch, Boston and Worcester, and Western railroads, at their lowest point of depression. The Vermont Central railroad passes, as do these other roads, through a thrifty yankee country, full of sagacious business men, who can three fold, and who will more than three fold the passengers and freight, such as may exist prior to the birth of the railroad. To him who calls in question this prediction, we will just state, that a pamphlet, signed by the men best acquainted with the business of Lowell, predicted, on the then existing passengers and freight, that the net income of the Boston and Lowell railroad would be \$36,000 a year, while the net income actually exceeds \$200,000 a year, at prices greatly reduced, both for the freight and for the passengers.

This plan of issuing stock to present stockholders at less than its par value is altogether preferable, in our opinion to the issuing of bonds, unless they can be guaranteed by the state, and thus bring their par value. It will be to those who avail of their privilege of taking the new stock, the best investment they ever made—as the stock of this road will at an early day, pay over 7 per cent. on *par*.—[Ed. R. R. J.]

#### Treatment of Ores.

The London Mining Journal always contains valuable information in relation to the mining operations of Europe, and in every number there are articles equally useful to those engaged in mining operations in this country; and we should be gratified to give to all such, a place in this Journal, if we had the space. There are some articles, however, which are entitled to a place, under any circumstances, and therefore room must be made for them.

The following article on the "Properties of Pure Iron," and the "Properties and composition of the Ores of Iron," in different countries, as presented by John Mitchell, esq., may be useful, and therefore we give it a place.

**TREATMENT OF THE ORES OF IRON.**—In discussing the treatment of the ores of this most valuable metal, it will be necessary to enter more minutely into the subject than with the ores of any other metal yet described in this series of papers. With this end in view, the author will give as far as is at present known, the composition of all the raw materials employed, as the ores, coal and limestone, together with the chief of the physical and chemical properties of the varieties of iron produced in commerce, as well as of absolutely pure iron.

**Properties of Pure Iron.**—The preparation of perfectly pure iron is a somewhat difficult matter. The following is the method employed by the author:—Pure peroxide of iron by precipitating a solution of perchloride of iron by an excess of ammonia; the precipitate was then perfectly washed with distilled water, and dried out of contact of dust. The dried oxide was then placed in a tray, formed of platinum foil, and that again in a tube of hard glass, to which was adapted an apparatus, to furnish a current of dry hydrogen gas. The gas passed, for a short time, over the oxide, and then the tube was surrounded with burning charcoal, and the whole kept at a red heat, until no more aqueous vapour

was given off—that being an indication of the complete decomposition of the oxide by the hydrogen gas; the burning charcoal was then removed, the current of gas still passing until the tube was perfectly cold. In effecting this reduction, great care must be taken to expose the oxide of iron to as intense a heat as the glass can bear, without falling out of shape. If the reduction takes place below a red heat, the metallic iron produced possesses the property of becoming incandescent on exposure to air, owing to rapid absorption of oxygen. A crucible is now to be prepared for the fusion of the spongy iron, by lining the inside with a thick coating of pure peroxide of iron—then as rapidly as possible, transferring the contents of the tube and covering the whole with more peroxide, so that the metallic iron is completely surrounded by that substance, and perfectly out of contact with the sides of the crucible, from which it might derive many impurities, after which a cover is to be luted on. The crucible is now to be placed on a piece of fire brick, in a good wind furnace, and the fire gradually raised, taking care to keep the fuel well about the crucible, and as it burns away to add more. It is best to add fresh coke before that in the furnace has sunk below the upper part of the pot—for by that method of feeding, the crucible always remains at the highest possible temperature. If the furnace is in good condition, about three hours is sufficient for the fusion of the metal; it is, however, better to allow it to remain in at least four hours, then remove it, and allow it to cool perfectly, when, on breaking the crucible, a button of perfectly pure iron will be obtained. Broling prepared a very nearly pure iron, by fusing the best commercial malleable iron in contact with oxide of iron; but the iron he procured must have retained aluminum, silicon, calcium, &c., and was, therefore, only an alloy, instead of a perfectly pure metal. It could not have contained carbon as that would have been removed by contact at a red heat with the oxide, a portion of which would have been reduced at its expense. The object of fusing the spongy iron in contact with pure oxide of iron, is to prevent the possibility of obtaining an alloy; for if it were fused in a naked crucible, the metallic iron would, by its great attraction for oxygen at such a high temperature, decompose the material of which the crucible was formed; and the liberated metals—as aluminum, calcium, as well as silicon—would have alloyed with the iron; this, evidently, is entirely prevented by the coating of oxide. The iron thus prepared was submitted to a most rigid and careful qualitative analysis, but not the slightest trace of any impurity could be detected; a given weight of it, converted into peroxide, gave very nearly the theoretical amount, so there could be no doubt of its absolute purity. Pure iron possesses an almost silvery whiteness, with a perceptible blueish tinge; it is much softer than the finest malleable iron, and seems less fusible. It has a kind of scaly, laminated fracture, with a distinct, although rather confused, appearance of crystallization. Its specific gravi-



ty was found, from the mean of many careful experiments, to be 78443, which is very near that obtained by Broling—78439. It has a distinct, although weak, taste, and smell; it is more powerfully susceptible of magnetism than any other metal. Before entering into the properties of other classes of iron, as ordinary malleable and cast-iron, it will be proper to give the compositions of the raw materials employed in the manufacture.

**Properties and Composition of the Ores of Iron.**—Most of the accompanying analyses, not by the author, are collated from Berthier's *Traité des Essais*, Beudant's *Mineralogie*, Brard's *Mineralogie Appliquée aux Arts*, and Karsten's *Metallurgie du Fer*.

**Native Iron** has been found at Canaan, in Connecticut, as also at Bedford, in Pennsylvania; that at Connecticut was met with in thin threads, in a quartz rock, or in layers, in micaceous schist; the structure is crystalline, and specific gravity about 6.72; it appeared to contain no foreign metal, but was mixed with graphite. The specimen from Bedford was malleable and crystalline, being made up of small rhombohedral prisms; the specific gravity was 7.337; it contained 1400 of arsenic, and 400 of graphite.

**Meteoric Iron.**—This generally occurs in isolated masses, and contains nickel, chromium, and sometimes cobalt; and Stromeyer has stated he has found molybdenum and copper. Prof. Pallas found a mass in Siberia possessing a vesicular structure, and containing crystals of crysolite; and Don Rubin de Celis found a mass, weighing 15 tons in the district of Chaco Guanlamba, in South America. The following are some analyses of this species of iron:—

1. **Iron found in Siberia, by Pallas (John).**—Iron, 90.0; nickel, 7.5; cobalt 2.5=100.

2. **Iron from Santa Rosa, near Santa Fe de Bogota (M. M. Riviero and Bousin-gault).**—Iron, 91.2; nickel, 8.2; stony matters, 3=99.7.

3. **Iron from Toluca near Mexico.**—Iron, 91.4; nickel, 8.6=100.

4. **Iron from Ellbogen (John).**—Iron, 87.2; nickel, 8.7; cobalt, 1.9; chromium and manganese, 1.0=100.

5. **Iron from Atacama (Turner).**—Iron, 93.40; nickel, 6.618; cobalt, .535=100.553.

6. **Iron from Louisiana (Shepard).**—Iron, 90.02; nickel, 9.674=99.694.

7 and 8. **Iron from Brahia (Laugier).**—

	No. 7.	No. 8.
Iron	91.50	87.35
Nickel	1.50	2.50
Chromium	traces	.50
Sulphur	1.00	1.85
Silica	3.00	6.00
Magnesia	2.00	2.10
	99.00	100.30

9. **A Specimen from Siberia, (Klaproth).**—Iron, 98.6; nickel, 1.2=99.8.

**Oxygen Compounds of Iron.**—**Peroxide of Iron.**—**Specular Iron Ore.**—**Micaceous Iron Ore.**—This variety occurs in very large quantities, in the Isle of Elba, where it is

said to have been worked for the last 3000 years. It occurs also in Saxony, Norway, Sweden, South America, and Siberia. It is met with in some of our Cornish mines, at Tavistock, in Devonshire, and Dunkeld, Perthshire. The stalactitic and fibrous varieties are employed to make burnishers, and the ochreous in painting, known as red ochre; the more argillaceous form red crayons.

**Red Hematite** is another form of peroxide of iron; is found in large quantities, in the Hartz, Saxony, Bohemia, at Ulverstone, in Lancashire, and many parts of England and Scotland.

The composition of chemically pure peroxide of iron is—iron, 69.34; oxygen, 20.66=100; but the best crystallised varieties I have found to contain traces of phosphoric acid, and sometimes considerable quantities of manganese, the purest containing not more than 99 per cent. of peroxide. The following analysis will show how much this variety of ore differs in composition; and all prove that the whole of them cannot be successfully submitted to the same treatment in the furnace. Before, however, entering into the analysis, it will be as well to mention another important branch of this family—viz: the brown, or hydrated hæmatites, also known under the name of hydrous oxide of iron, limonite, and brush ore. This variety also occurs in many places.

1. **Micaceous Ore from Mount St. Bernard.**—Peroxide of iron, 58.0; silica, 42.0=100.

2. **Compact Ore from the Department of the Moselle.**—Peroxide of iron, 99.0; oxide of manganese, 4; clay, 4=99.8. This specimen was nearly pure.

3. **Specimen of Crystallised Ore by the Author.**—Peroxide of iron, 99.32; phosphoric acid, .31; oxide of manganese, 1.8; alumina, .17=99.98.

4. **Ferruginous Schist from Cherbourg.**—Peroxide of iron, 73.8; oxide of manganese, 3.4; silica, 12.8; alumina, 2.4; carbonate of lime, 6.0=98.4.

5. **Granular Ore from Bohemia.**—Peroxide of iron, 62.0; oxide of manganese, 9.0; silica, 21.0; alumina, 4.8; water, 3.2=100.

6. **Calcareous Oolitic Oxide from Monte de Lazac.**—Peroxide of iron, 44.0; clay, 6.0; carbonate of lime, 50.0=100.

7. **Compact Ore from La-Voulte (Ardech).**—Peroxide of iron, 66.0; oxide of manganese, 2.5; silica, 16.8; alumina, 12.0; carbonate of lime, 4.4; carbonate of magnesia, 3.7; water, 2.8=98.2.

8. **Specimen of Hematite, in fine Crystalline Scales, which when rubbed between the fingers, produced a stain like Plumbago: by the Author, (locality unknown).**—Peroxide of iron, 83.610; silica, 11.421; alumina, 2.184; lime, 1.206; magnesia, .280; phosphoric acid, .628; potash, .142; soda, .098; oxide of manganese, .317=99.886.

9. **Specimen of Ore from Fouta-Diallon in Upper Senegal.**—Peroxide of iron, 77.2; silica, 2.8; water, 11.4; oxide of chromium and titanium, trace=99.6.

11. **Ore from Stirling, Massachusetts**

(Thomson).—Peroxide of iron, 75.5; oxide of manganese, 22.5; water, .4; oxide of chromium and titanium, 1.2=99.6.

12. **Ore from the neighborhood of Ulverstone, by the Author.**—Peroxide of iron, 70.614; silica, 27.908; magnesia, .189; phosphoric acid, .081; lime, .214; alumina, .510; sulphuric acid, .400; potash, soda and manganese, traces=99.914.

13. **An Ore from Cornwall by the Author.**—Peroxide of iron, 60.00; alumina, 7.20; silica, 22.00; lime, 7.10; magnesia, 3.07; arsenious acid, .13; oxide of manganese, .31; potash and soda, traces=99.81.

14. **Another Specimen from Cornwall, by the Author.**—Peroxide of iron, 54.12; silica, 24.81; magnesia, 5.20; lime, 7.14; alumina, 7.42; phosphoric acid, .68; potash and soda, .42; tin, zinc and manganese, traces=99.79.

**Hydrated Hematites.**—1. **Ore from Mandorf by Mallinckhoff.**—Peroxide of iron, 60.0; water, 15.0; silica, 12.0; alumina, 13.0=100.

2. **Specimen from Restormel Mine, near Lostwithiel, by Lieut.-Col. P. J. Yorke.**—Silica, 28; water, 10.07; peroxide of iron, 89.55; oxide of manganese, .6=100.06.

3. **Another Specimen from Cornwall, by the same Analyst.**—Silica, 2.42; water, 14.28; peroxide of iron, 82.16; sesquioxide of manganese, 1.18; alumina and tin, traces=99.99.

4. **Another Specimen by the same Analyst, from Wansiedel.**—Silica, 1.46; water, 12.42; peroxide of iron, 85.80; sesquioxide of manganese, 1.30=100.98.

5. **Ore from Longroy (Berthier).**—Peroxide of iron, 85.1; water, 12.1; clay, 2.7=100. Iron produced by assay, 61.5 per cent.

6. **Ore from Rancie Arriege (Berthier).**—Peroxide of iron, 82.2; oxide of manganese, 3.6; water, 12.2; clay, 2.0=100.

7. **Ore from Penne (Vanquelin).**—Oxide of iron, 48.0; water, 9.0; silica, 15.0; alumina, 31.0=100.

8. **Granular Ore from Hagau (Klaproth).**—Peroxide of iron, 52.0; water, 14.5; oxide of manganese, 1.0; silica, 23.0; alumina, 6.5=98.

9. **Granular Ore from Berri (d'Aubuisson).**—Peroxide of iron, 70.0; water, 15.0; silica, 6.0; alumina, 7.0; oxide of manganese, trace=98.

10. **Specimen of Ore by the Author.**—Peroxide of iron, 85.645; protoxide of iron, 1.820; magnesia, .084; alumina, .230; potash, .384; soda, .157; silica, 2.343; water, 9.365; oxide of manganese, traces=99.998.

11. **Compact Hydrate from Bendorf (right bank of the Rhine).**—Peroxide of iron, 67.0; oxide of manganese, 1.8; water, 10.2; silica, 18.6=97.6. Iron obtained by assay, 47.

12. **Compact Hydrate from Pennsylvania.**—Peroxide of iron, 51.2; oxide of manganese, 2.8; water, 10.0; alumina, 2.0; silica 34.0=100. Iron produced by assay, 36.5.

13. **Ore from Vandenesse (Département de la Nièvre).**—Peroxide of iron, 50.0; water, 7.0; silica, 42.5=99.5.

14. **Ore from Faverolle (Corieze).**—Peroxide of iron, 76.3; oxide of manganese, 3;



water, 124; phosphoric acid, 14; clay, 96-100. Iron obtained by assay.

#### The City of Cairo--Illinois--The Central Illinois Railroad.

We have often heard it wondered, "why there is not now a city at the place called Cairo, at the junction of the Ohio and Mississippi rivers. It is, it seems to us, without knowing its local disadvantages, the place of all other inland positions for a large city. The Missouri, the Mississippi, the Ohio, the Tennessee, the Wabash, and the Illinois, all flow and bear their burthens to that point--where the Father of waters receives them, and bears them a thousand miles on its bosom to the ocean. Cairo is the "half-way house," at which all who pass should stop--and so they will in time to come.

The following letter, from the New York Courier and Enquirer, will, perhaps, be interesting to many.

Cairo, Ill., July 1, 1848.

Messrs Editors.--I arrived at this point a few days since, and as I depart to-morrow, shall at once seize the occasion to comply with the request made by yourselves to write something in relation to the present appearance of Cairo and its prospects for becoming a great commercial and manufacturing emporium. The stranger on his arrival here, might be unfavorably impressed with its appearance, at least I judge so from my own feelings. The large hotel at the point, though roomy, and as I understand, very well kept, presents from the Mississippi river rather an unsightly appearance, as the back part of the building only can be seen; and the other houses in the immediate neighborhood, are not calculated to create a favorable impression. Yet on walking about the vicinity of the confluence of the two rivers and around the levee, the question at once arises to the mind of a stranger--why is there not now at this point a city? No practical man, after the proper examination, can perceive a single disadvantage that would be a serious obstacle to the growth of Cairo, or that might not be overcome by the smallest exercise of energy and expenditure of capital. The levees surrounding Cairo are substantially built, and calculated with ordinary care and repair, to entirely protect the town from all inundation. The Ohio levee runs from the point about a mile up that river, to what is called Upper Cairo, and is graded so as to make an excellent wharf. When paved it will probably be the finest wharf in the country. The Central railroad depot is at Upper Cairo, from which point the road has been graded for about thirty or forty miles, and is ready for the iron. This portion of the levee, with that on the Mississippi river, is very wide and must have cost an enormous sum. The levee uniting the two, and called the "cross levee," while it is not so wide, is sufficiently strong to prevent the passage of any floods which might overflow the banks of the river.

As you are aware, the great objection to this point as the site in prospect of a great city, has been its inundation; and at this time it is the general belief among those who have never visited the place, that it is utterly impossible to protect it; taking it for granted that if such were not the fact there would be at this time a large city here. I confess that

even the representations to the contrary, coming from the highest sources too, had not entirely dispelled this idea from my mind previous to my arrival at Cairo. But after a careful and impartial examination, and with the proper knowledge too, from my business, of the manner in which such investigation should be prosecuted, I most fully concur with the written and verbal reports of other engineers who have visited Cairo, for the purpose of examining its advantages and disadvantages, in believing the expense and labor of entirely protecting it from the possibility of inundations as too insignificant to be thought of as an objection to the site. I could very easily prove this to any one, however prejudiced he might be.

There has been another objection urged to Cairo, even more ridiculous, from the facts of the case than the other; and that is its sickness. Having just come from Springfield, Illinois, in the interior of the state, I was at least prepared to find Cairo more healthy than that town, or others in its neighborhood from the representations of the citizens of Springfield, themselves. But since my arrival I have conversed with the citizens of this and other towns in the vicinity, and with physicians, and am perfectly satisfied that there is no healthier place in this region of country. There is a constant breeze to carry off all miasmata arising from the rivers and at this time there are no ponds here to swelter in a summer sun and nurse disease.

There are at Lower Cairo several excellent stores which are supported by the country around, and in a handsome manner. The fine business they are doing, illustrate more than all words could the character of the country back. I have seen in this portion of southern Illinois, as fine farms as in any other district of the state. The character of the people has changed much within the last few years, and now the inhabitants are known as an industrious and well behaved class of people. They have excellent land, as fine timber as there is in the country, a good climate, and in fact everything generally demanded to suit the wants of emigrants. At this portion of Cairo there are also three large wharf boats; which are no more nor less than large steamers with their engines, &c., taken out. On these the traveller can be made comfortable as at a hotel. Boat stores are sold, and the principal re-shipping business of the place done on them. Besides these there are a number of trading boats, bakeries, &c., at the wharf. Now the question arises with the stranger, why is it, if Cairo, be not subject to inundations, that all this business is not done in houses? Simply because no one can get the houses to do it in. My inquiries, in connection with your own, told me that before I ever visited Cairo to stay a day.

The property being owned by a company, they are not yet prepared to dispose of lots, but I suppose will be this summer. From the number of capitalists who have stopped at Cairo to purchase, these lots will meet with ready sale, and a city will spring up

here more rapidly I am convinced, than any yet presented in the West. This, then is the reason why there is not a large city at the confluence of the Ohio and Mississippi rivers at this time; because the public have not been able to purchase lots to build upon. The company will not sell till they can give a clear title to the property.

The advantages of this point for a great commercial and manufacturing city, are too familiar to be enlarged upon here. The number is now becoming daily fewer of those who believe, that with all the great advantages possessed by Cairo, the disadvantages must overrule them. Its situation, at the junction of the two greatest rivers of the mighty streams of the West, and at the head of Mississippi navigation, so far as the larger steamboats are concerned, at least a great portion of the year; with thousands of miles of river navigation settling at its wharf--midway between the Gulf and the Lakes--the great re-shipping point of the Mississippi river--the southern terminus of the great Central railroad, traversing the whole state, and connecting the lower Mississippi with the Lakes, thence running from a point of its connection to Galena or the upper Mississippi--these and other advantages point it out as the commercial city of the West. And the fact that iron can be obtained from the Tennessee river at probably 25 per cent cheaper than at Pittsburg, and that coal of the best quality may be obtained in this region, there is no doubt but it must be a great manufacturing city.

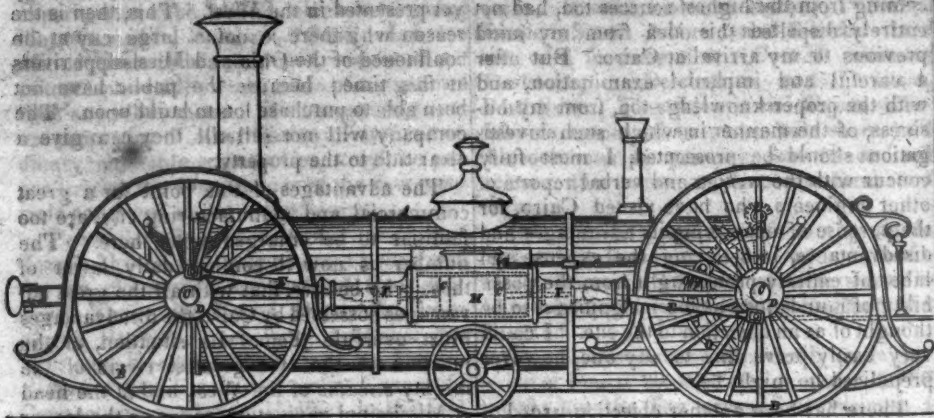
I confess to some enthusiasm in speaking of Cairo, although no one would ever have accused me of it before this visit to the point. The Central railroad alone would make a city of Cairo were its disadvantages a hundred-fold greater. The bill asking a donation of land to assist in the roads completion, having passed the Senate by a large majority the citizens here have no doubt of its passage through the House. I hope it may not in manner be laid over till next session. This road will open the vast interior of the state to the markets, provide a way for getting timber to the interior, be a great means of national defence, and afford a thoroughfare of trade and travel that will benefit the whole country.

There is a large and beautiful paper printed at Cairo, called the "Cairo Delta," which, from the vigor of its editorials, and the untiring industry of its editor in collecting and promulgating news, making up markets, and publishing everything of local interest, is gaining an influence rarely attained by a "country sheet." By the list of the steamboat arrivals, which you may find published in the copies of the Delta I send, you will perceive that an immense number of boats are continually stopping here--more than at any other point in the West. There are regular packets running from this point to St. Louis and Louisville.

My letter has already exceeded all proper limits, yet I have not said the half I wish to say. Yours, respectfully,  
W. P. C.



## RITCHIE'S IMPROVEMENTS IN LOCOMOTIVE ENGINES.



[Specification of Patent granted to Charles Ritchie of Aberdeen, in the shire of Aberdeen and kingdom of Scotland, engineer, for certain improvements in locomotive engines. Patent dated March 2, 1848.]

This invention consists in, and has reference to, certain improvements in locomotive and other engines, carried into practical effect by the means, or through the agency, of certain new, or improved, mechanical combinations and arrangements, having for their object the simplification of the construction, and the augmentation of the efficiency, of such engines.

The first part consists in the application of a cylinder, or cylinders, with two distinct and separate pistons in each cylinder, to which are affixed piston-rods, for imparting motion to the cranked axles and driving wheels fixed thereon, whereby the rocking, or oscillating, motion attending locomotive engines, as hitherto constructed, is considerably diminished, and greater steadiness of motion obtained, as, by this arrangement, the momentum of one piston, together with its cranks, and other connections, is at all times exactly balanced, or nearly so, by that of the other, in consequence of the approaching or receding of the pistons to and from each other being always simultaneous. The second part relates to an improved mode of working the slide-valves of locomotive and other engines, by rendering the eccentric, which imparts motion thereto, available for the purpose of reversing the engine. The third part relates to an improved valve for regulating the admission of steam, or other motive power, to the working cylinders of locomotive and other engines, and to improvements in safety-valves, to be applied to the boilers of engines, or other reservoirs of power. The fourth relates to an improved antiprimer, or steam-collector, to be applied to the boilers of steam-engines. The fifth part relates to an improved self-acting feeding apparatus, for supplying water to the boilers of steam-engines. And the sixth and last part consists in the application to the wheels of locomotive engines of an improved guard, or safety-break.

The drawing exhibits a side elevation of a locomotive engine, constructed according to this invention. A marks the boiler of the engine; B, the driving-wheels fixed upon

the crank axles, C; the boss, or nave, D, of each of such wheels serving as the crank, to which one end of a connecting-rod, E, is attached by a crank-pin, or stud, a, secured to the said nave, and the opposite end of the rod, E, is connected to the piston-rod, F, in the usual way of forming such connections. G, G, two pistons, to which are attached the rods, F, F—the said pistons working steam-tight in the cylinder, H, by means of metallic, or other packing.

The cylinders, H, are securely fixed to each side of the boiler, A, in any convenient manner. Instead of having the fixed cylinder and connecting-rods, as above described, oscillating cylinders may be used, with their piston-rods connected directly with the crank-axle; or where fixed cylinders are used, and space is an object, the connecting-rods, E, E, may be dispensed with, by attaching to the piston-rods a cross frame, in which there is a slot formed, into which a crank-pin, or stud, takes. The outer end of the frame works through a guide-hole, fixed to the side of the engine, and thus the rectilinear motion of the piston-rods imparts rotary motion to the crank-axle and driving-wheels fixed thereon. Now, as either of the methods will occupy less space than that exhibited by the drawing, it will appear evident, that these arrangements are more particularly intended to be used for short engines, in which there is not sufficient distance between the axles to admit of the adoption of the other arrangement; or, instead of one long cylinder, two short cylinders may be employed, each having a separate piston—the bottoms of the cylinders being made to abut against each other, are securely connected together in that position. The steam or other motive power, may be admitted through the ports, or passages, into the cylinder by means of a common slide, which may be actuated in the following manner:—Upon the hindmost driving-axle is fixed an eccentric, upon which is a cam, of the following peculiar construction:—Two rods are fixed to, or formed upon, the said cam; or it may be composed of one double-gabbed rod, one gab being employed for effecting the backward, and the forward, motion of the slide-valve, through the intervention of a double lever, which has its fulcrum upon a stud, fixed to the side of the boiler, as shown by the drawing, and this

lever is connected to the slide-valve by a rod,

c. The length of this lever, as also the angle of inclination of the parts, O, O, should be in accordance with the lead of the valve—the one or other of the inclined parts, O, being caused to act upon the lever by a hand lever, connected to the said cam in any convenient manner, so as to enable the engine-driver to start, reverse, and stop the engine readily, by the same eccentric which gives motion to the slide valve. By making the end of the valve rod moveable, as in a slot in the lever, P, the steam may be worked expansively at pleasure. Improved spring safety valves are exhibited by other drawings attached to this specification, from which it will appear there are two forms of construction, showing a valve with a conical shaped seat, being a flat valve, and constructed with a flange, which the inventor terms a compensation flange—such flange being let into the seat vertically, about one-sixth of the diameter of the steam-way in the valve seat. This valve is weighted by a helical spring, of sufficient power, according to the required pressure of the steam; and when it is intended to be used as a reserve safety valve, the spring is to be placed around the part of the stem below the valve—that is to say, within the boiler. The advantage of this form of construction of valve over the ordinary valve is as follows:—As soon as the pressure of the steam rises the valve from its seat, the flange, being exposed to the pressure of the steam, presents an increased surface, which compensates for the increasing resistance of the helical spring until the valve has been raised to a height equal to the area of the steam way, when it allows the steam or vapour, to escape freely. When not intended as a reserve safety valve, this valve may have the spring placed above it. Another valve, which is called an indicator safety valve, is exhibited, consisting of a piston, which is fitted into a tube, having a spring attached to it—lateral openings being made in the tube, to allow the steam to escape when the piston becomes raised above such openings, and by making the said tube moveable within another one, the “blowing off” point may be varied at pleasure. An index, like that of a barometer, may then be attached to the stem or rod, of the piston, and will indicate very slight variations of pressure. A regulating valve is attached, the construction and arrangement of which is as follows:—There is a short socket pipe, having two conical valve seats formed therein, into which the valves fit; such valves being connected together, or formed upon one stem, into which one end of a rod is screwed, or otherwise made fast, and the opposite end of the said rod attached to an eccentric spindle, working through a stuffing box, to which a hand lever is fixed, such lever and rod being for the purpose of opening or closing, the regulator valve at pleasure.

The anti primer before mentioned is formed in the following manner: Two distinct, and separate plates of sheet metal, the outer edges of which are securely fixed to the inside of the boiler, by riveting, or otherwise, the said plates being inclined towards the centre of the boiler, care being taken to leave



a space between the inner edges of the two plates, so as to reserve a channel lengthwise of the boiler, for the passage of steam into the steam chamber thus formed, and within, or in connection with which the regulating valve is situate the steam pipes which lead to the cylinders being connected thereto. Instead of forming the antiprimer of two separate strips, or pieces of metal, the same result may be obtained, by forming it of one strip, or piece of metal, of the shape known; the said plate being pierced with an infinite number of small holes. The construction and arrangement of the feeding apparatus are as follows:—There is a metal cylinder, which should be bored perfectly true and cylindrical, fitted with a piston, the rod of such piston forming the plunger, or ram, of the cold water pump, the barrel of which serves as a compound gland for the stuffing box of the cylinder and pump barrel. The slide valve, which may be made to cover or uncover the ports, or passages, in the cylinder, by the opposite sides of the piston coming into contact with the levers, which are connected to the slide valve by a rod or rods. There are spherical valves (the seats of which are knife-edged, formed within the spherical flange pieces, which have openings for establishing a communication between the tender, the pump barrel, and the steam boiler, as exhibited. The *modus operandi* of this feeding apparatus is as follows: Upon steam being admitted from the boiler into the cylinder, through the steam port, or passage, the piston will be acted upon, and the ram, or plunger, be withdrawn, the water from the tenders will raise the valve, and enter the barrel, to supply the space previously occupied by the plunger; or ram; by this time the piston will have acted upon the lever, so as to cause the slide valve to uncover the port, or passage, and cover the port or passage, P<sup>1</sup>, thereby allowing the steam on the other side of the piston to escape through the exhaust pipe; the piston will now be impelled in a contrary direction, and the plunger, or ram, entering the barrel, will cause the one valve to be closed, and the other to be opened by pressure of the water therein, which as the plunger, or ram, advances, will be forced into the boiler, to supply the deficiency of that water which had been converted into steam; R<sup>1</sup>, R<sup>1</sup>, mark wheel guards, or safety breaks, which are each composed of a strong band, or strap of iron, or other substance, which is placed like a splasher over the wheel to be protected, the inner surface of the said guard, or break, is formed of the converse shape to that of the tyre, and fixed securely to the framing, or boiler, or both, as near to the top of the wheel as the play of the bearing springs will admit of, and as near to the back of each wheel, as possible, without touching it.

To each side of the engine a bar of iron is placed, and securely fixed in a longitudinal direction; such arrangement being intended to preserve such wheels in a vertical position and thereby support the engine, in the event of the axles breaking, and to operate at the same time as a break, to retard the motion of the engine, in the event of any such acci-

dent. Another improvement in locomotive engines consists in arranging that part of the boiler known as the firebox, in such manner that the height of the water in this part of the boiler shall at all times be at a proper level, which is effected by what is called an anti-fluctuator, which is a separate partition plate across the water space, or an extension of the plate to which the tubes are fixed as shown; and, by causing the water to be fed to the boiler at that part which surrounds the fire, it will appear evident that the barrel of the boiler can only receive its supply of water from that which overflows the said partition plate. Having described the nature of this invention, the patentee remarks, that he does not claim the exclusive use of any of the separate parts above mentioned and referred to, when considered, *per se*, and apart from the said invention, as hereinbefore set forth and described. What he does claim being—1. The use and application to locomotives and other engines of one or more cylinders, having two distinct and separate pistons working therein; such cylinder, or cylinders, being placed between two driving or crank axles, to which they impart motion; and further, the mechanical combinations and arrangements employed for working such cylinder, or cylinders, by one slide valve, as hereinbefore particularly set forth (and represented at *figs. 1, 2, 3, 4, 5*, of the drawings annexed to specification). 2. The use and application to locomotive and other engines, of two eccentric rods, or one double gabled rod, in connection with one common eccentric, for the purpose of effecting the reversing motion of the engine, as hereinbefore particularly described (and represented at *fig. 5*, of the drawings annexed to specification). 3. The use and application to locomotive engines of a regulator, composed of two valves, which may be either conical or flat, as hereinbefore particularly described (and represented at *figs. 2 and 7* of the drawing, annexed to specification). 4. The construction of safety valves with a flange termed a compensation flange, without regard to the manner in which such valves may be weighted, as hereinbefore particularly described (and represented at *fig. 7* of the drawings annexed to specification). 5. The use and application to locomotive and other engines of an indicator safety valve, as hereinbefore described and exhibited at *fig. 2* of the drawings annexed to specification). 6. The use and application to the boilers of locomotive and other engines of an antiprimer, or steam collector, of the construction hereinbefore particularly described (and exhibited at *figs. 2 and 3* of the drawings annexed to specification). 7. The use and application to locomotive and other engines of a self-acting feeding apparatus, distinct and separate from the working parts of engines, as hereinbefore particularly described (and represented at *figs. 2 and 6* of the drawings annexed to specification). 8. The use and application to the wheels of locomotive engines of a wheel guard, or safety-break of the construction before described (and exhibited at *figs. 1, 2, 3, 4*, of the drawings annexed to specification). 9. The use and

application to the boilers of locomotive and other engines, where tubular boilers are used of a partition plate, so as to preserve the water in that part of the boiler above the fire at a proper level, and also to prevent the general fluctuation, as hereinbefore particularly described and set forth (and represented at *fig. 2* of the drawings annexed to specification).

Patent office and Designs Registry  
210, Strand, Sept 4.

#### Tubular Bridges—Conway and Britannia.

A paragraph in our last London Mining Journal says that,—

"The report of Mr. R. Stephenson, presented to the meeting of the Chester and Holyhead railway, on Wednesday last, stated that the construction of the second tube of the Conway bridge is far advanced, and there is no doubt it will be ready for removal by the middle of October. The pontoons have been strengthened, the capstans re-erected, and every other arrangement in a forward state for its erection. About three-fourths of the masonry of the Britannia bridge have been completed; and, taking the progress now making as the guide, it is calculated that the first tube will be ready for lifting to its place in the course of next March or April. The iron work at the Britannia bridge has progressed even more rapidly than was expected, and the four large tubes are just approaching completion. The whole of the central portion of the tubes is finished, and the castings at the ends are now being inserted. The scaffolding for the end tubes on the Anglesea side is now complete, and a large proportion of the iron is already punched for their immediate commencement. The scaffolding necessary for the tubes on the Carnarvon side will be erected immediately, to open the line throughout as rapidly as possible. Every arrangement is being made for floating the tubes as soon as the masonry is ready. The works throughout the whole of the line are standing in the most satisfactory manner. The daily passage of heavy trains through the Conway tube for four months, together with a series of careful observations as to the effects produced, have completely established the correctness of the views upon which the designs for this and the Britannia were based. The cost of these structures has very much exceeded what was originally calculated upon; on reconsidering, however, the whole subject, Mr. Stephenson is satisfied that the method which has been adopted is certainly the most eligible, if not the only practical one."

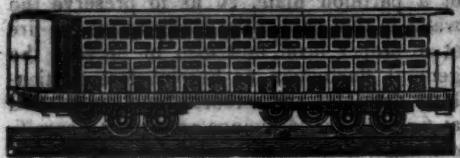
#### RAILROAD IRON.

THE MOUNT SAVAGE IRON WORKS, Allegheny County, Maryland, having recently passed into the hands of new proprietors, are now prepared, with increased facilities, to execute orders for any of the various patterns of Railroad Iron. Communications addressed to either of the subscribers will have prompt attention.

J. F. WINSLOW, President,  
Mount Savage Iron Co., Troy, N. Y.  
ERASTUS CORNING, Albany.  
WARREN DELANO, Jr., N. Y.  
JOHN M. FORBES, Boston.  
ENOCH PRATT, Baltimore, Md.  
November 6, 1848.



## CAR MANUFACTORY, CINCINNATI, OHIO.



**K ECK & DAVENPORT WOULD RE-**  
spectfully call the attention of Railroad Com-  
panies in the West and South to their establishment  
at Cincinnati. Their facilities for manufacturing  
are extensive, and the means of transportation to  
different points speedy and economical. They are  
prepared to execute to order, on short notice, Eight-  
Wheeled Passenger Cars of the most superior de-  
scription, Open and Covered Freight Cars, Four or  
Eight-Wheel Crank and Lever Hand Cars, Trucks,  
Wheels and Axles, and Railroad Work generally.  
Cincinnati, Ohio, October 2, 1848. 411f

## RAILROAD IRON.

**THE TRENTON IRON COMPANY ARE**  
now turning out one thousand tons of rails per  
month, at their works at Trenton, N. J. They are  
prepared to enter into contract to furnish rails of any  
pattern, and of the very best quality, made exclu-  
sively from the famous Andover iron. The position  
of the works, on the Delaware river, the Delaware  
and Raritan canal, and the Camden and Amboy  
railroad, enables them to ship rails at all seasons of  
the year. Apply to

**COOPER & HEWITT, Agents,**  
17 Burling Slip, New York.  
October 30th, 1848.

## DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

## RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS  
OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished  
at short notice; also, STEEL SPRINGS  
of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,  
Reuben Dean, }  
Elijah Packard, } SPRINGFIELD, MASS.  
Isaac Mills, } 1y48

## NOTICE. RAILROAD LINE BETWEEN ALBANY AND BUFFALO, N. Y.

1848.—SCHEDULE FOR RUNNING.—1848.

Going west.	1st train.	2d train.	3d train.
Leaves Albany	7 1/2 A.M.	2 P.M.	7 P.M.
Pass Utica	1 P.M.	7 P.M.	1 1/2 A.M.
Pass Syracuse	4 P.M.	11 P.M.	5 A.M.
Pass Auburn	6 P.M.	1 A.M.	7 A.M.
Pass Rochester	12 1/2 M.N.	7 A.M.	1 P.M.
Arrives at Buffalo	5 1/2 A.M.	12 M.	6 P.M.
Going east.	1st train.	2d train.	3d train.
Leaves Buffalo	7 1/2 A.M.	2 P.M.	7 P.M.
Pass Rochester	12 1/2 M.N.	7 P.M.	13 M.N.
Pass Auburn	6 P.M.	1 A.M.	6 A.M.
Pass Syracuse	8 P.M.	3 1/2 A.M.	8 A.M.
Pass Utica	12 M.N.	7 A.M.	11 1/2 A.M.
Arrives at Albany	5 A.M.	12 M.	4 P.M.

Adopted February 18, 1848, in convention at Al-  
bany. (Copy.) T. Y. Howe, Jr.,  
Secretary of the Convention.

## JAMES LAURIE, Civil Engineer.

No. 23 RAILROAD EXCHANGE, BOSTON, MASS.  
Railroad Routes Explored and Surveyed. Esti-  
mates, Plans and Specifications furnished for Dams,  
Bridges, Wharves, and all Engineering Structures.  
October 14, 1848. 6m\*

## RAILROAD IRON.

**3000 TONS, ABOUT 60 LBS. PR**  
lineal yard—deliverable early in  
the Spring, and of undoubted quality, can be con-  
tracted for at a low rate. For sale by

**DAVIS, BROOKS & CO.,**  
68 Broad street.  
New York, Sept. 16, 1848, 301f  
Also on hand—1000 Tons best quality Rails.

**FULLER'S PATENT INDIA RUBBER CAR**  
SPRINGS.—These Springs have been in use  
for nearly four years, with most complete success,  
and they are now in use upon most of the principal  
roads in this country. They are made of the best  
material, are economical, light, and very easy in  
their motion—all persons using them are guaranteed  
against adverse claims.

Offices 78 Broad street New York, and Jas. Lee  
& Co., 18 India wharf, Boston.

Railroad companies are cautioned against the  
statements made by the New England car company.  
The India rubber used by the patentee is the best  
that can be made, and does not conflict with any ex-  
isting patent. The ridiculous statement that a pa-  
tentee may not vend his own invention needs no re-  
mark.

The patent for these springs was granted to W.  
C. Fuller, in Oct. 1845, in the United States and in  
England; A Mr. Ray claims to have invented an-  
other spring, which counsel advise, is a mere eua-  
sion of Mr. Fuller's patent, and proceedings are be-  
ing taken to stop that infringement.

"The New England Car Company" have pub-  
lished an article from the pen of Mr. Hale, president  
of the Boston and Worcester railroad, expressing his  
opinion concerning these springs—but they have for-  
gotten to publish the whole of that article; it is  
therefore given in full now, and the portion omitted  
by the New England car company is printed in ital-  
ics, that the public may judge of the manner in  
which this "company" pervert Mr Hale's meaning.  
G. M. KNEVITT, Agent,  
78 Broad St., New York.

September 30, 1848.

[From the Boston Advertiser of the 7th June.]

## INDIA RUBBER SPRINGS FOR RAILROAD CARS.

"Of the numerous uses to which the wonderful  
elasticity and durability of India rubber, renders this  
material applicable, we are hardly aware of one, in  
which it has been more successful than in forming  
springs for railroad cars. We have had occasion  
to observe, for some months past, its application to  
this use, on one of the passenger cars on the New-  
ton special train of the Boston and Worcester rail-  
road. It is there used not only for the springs on  
which the car rests, but for the springs attached to  
the draw bar, at each end of the car, to prevent any  
jar on the sudden commencement, or interruption of  
the motion of the car. For both these purposes it  
appears to be admirably adapted, and we do not  
learn that during the period in which it has been  
used, any defect in it has been discovered. It ren-  
ders the movements of the car extremely easy, and  
protects it more effectually, we think, than any other  
spring which we have seen in use, from every harsh  
or unpleasant motion, either vertical or horizontal.  
It is also simple in its form and application, ex-  
tremely light, and little liable to get out of repair.  
During the period of some months in which we have  
seen the springs in operation, there is no apparent  
wear or diminution of its efficiency. Each spring  
is composed of several circular layers or rings of India  
rubber, a thin metallic plate of the same size being in-  
terposed between each of the layers. From the simpli-  
city of its form, it cannot be expensive, and it admits of  
being made more or less elastic almost at pleasure. The  
invention, we understand, was first patented in Eng-  
land, where it has been introduced into general use on  
several of the principal railroads, and we have no doubt  
it will come into very extensive use in this country. The  
patent for this invention, we understand, has been  
granted to Mr. W. C. Fuller in England and France,  
and also in this country. Mr. Knevelt, of New York,  
is the agent for the patentee in the United States, and  
he has established a branch office for the supply of the ar-  
ticle in this city, as may be learned from an advertise-  
ment in another column of this paper."

**RAILROAD SCALES.—THE ATTEN-**  
tion of Railroad Companies is particularly re-  
quested to Ellicott's Scales, made for weighing load-  
ed cars in trains, or singly, they have been the in-  
ventors, and the first to make platform scales in the  
United States; supposing that an experience of 20  
years has given a knowledge and superior advan-  
tage in the business.

The levers of our scales are made of wrought  
iron, all the bearers and fulcrums are made of the  
best cast steel, laid on blocks of granite, extending  
across the pit, the upper part of the scale only being  
made of wood. E. Ellicott has made the largest  
Railroad Scale in the world, its extreme length was  
one hundred and twenty feet, capable of weighing  
ten loaded cars at a single draft. It was put on the  
Mine Hill and Schuylkill Haven Railroad.

We are prepared to make scales of any size to  
weigh from five pounds to two hundred tons.

**ELLICOTT & ABBOTT.**  
Factory, 9th street, near Coates, cor. Melon st.  
Office, No. 3 North 5th street,  
Philadelphia, Pa.

## TO RAILROAD COMPANIES AND MAN-

ufacturers of railroad Machinery. The subscri-  
bers have for sale Am. and English bar iron, of al-  
sizes; English blister, cast, shear and spring steel;  
Juniata rods; car axles, made of double refined iron;  
sheet and boiler iron, cut to pattern; tiers for loco-  
motive engines, and other railroad carriage wheels,  
made from common and double refined B. O. iron;  
the latter a very superior article. The tires are  
made by Messrs. Baldwin & Whitney, locomotive  
engine manufacturers of this city. Orders address-  
ed to them, or to us, will be promptly executed.

When the exact diameter of the wheel is stated in  
the order, a fit to those wheels is guaranteed, saving  
to the purchaser the expense of turning them out in-  
side. **THOMAS & EDMUND GEORGE,**  
45 N. E. cor. 12th and Market sts., Philad., Pa.

## THE NEWCASTLE MANUFACTURING

Company continue to furnish at the Works,  
situated in the town of Newcastle, Del., Locomotive  
and other steam engines, Jack screws, Wrought iron  
work and Brass and Iron castings, of all kinds con-  
nected with Steamboats, Railroads, etc.; Mill Gear-  
ing of every description; Cast wheels (chilled) of  
any pattern and size, with Axles fitted, also with  
wrought tires, Springs, Boxes and bolts for Cars;  
Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders  
will be executed with promptness and despatch.  
Communications addressed to Mr. William H.  
Dobbs, Superintendent, will meet with immediate  
attention. **ANDREW C. GRAY,**  
45 President of the Newcastle Manuf. Co.

## LAP—WELDED WROUGHT IRON TUBES

FOR  
**TUBULAR BOILERS,**  
FROM 1 1/2 TO 8 INCHES DIAMETER.

These Tubes are of the same quality and manu-  
facture as those so extensively used in England,  
Scotland, France and Germany, for Locomotive,  
Marine and other Steam Engine Boilers.

**THOMAS PROSSER,**  
Patentee.  
28 Platt street, New York.

**ENGINEERS' AND SURVEYERS'  
INSTRUMENTS MADE BY  
EDMUND DRAPER,**  
Surviving partner of  
**STANCLIFFE & DRAPER.**



No 23 Pear street, below Walnut,  
1y10 near Third, Philadelphia.



**DIRECT ACTION ENGINES  
FOR STEAMBOATS.**THE PATENT DOUBLE CYLINDERS,  
AND ALSO**THE ANNULAR RING PISTON ENGINES,**  
of Messrs. Manildray, Sons & Field, of London,  
may be built in the United States, under license,  
which can be obtained of their agent,THOMAS PROSSER, C. E.,  
28 Platt street, New York.

May 6, 1848.

**WILLIAM JESSOP & SONS,  
CELEBRATED CAST-STEEL.**The subscribers have on hand, and are constantly  
receiving, from their manufactory,**PARK WORKS, SHEFFIELD,**Double Refined Cast Steel—Square, flat & octagon.  
Best warranted Cast Steel—Square, flat & octagon.  
Best Double and Single Shear Steel—Warranted.  
Machinery Steel—Round.Best and 2d gy. Sheet Steel—for Saws and other  
purposes.German Steel—flat and sq., "W. I. & S." "Eagle"  
and "Goat" Stamps.

Genuine "Sykes," L. Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most fa-  
vorable terms, by **WM. JESSOP & SONS,**  
91 John Street, New York.

Also by their Agents—

Curtis &amp; Hand, 47 Commerce St., Philadelphia.

Alex'r Fullerton, &amp; Co., 119 Milk St., Boston.

Stickney &amp; Beatty, South Charles St., Baltimore.

May 6, 1848.

**NEW PATENT CAR WHEELS.****THE SUBSCRIBERS ARE NOW MANU-**  
facturing Metallic Plate Wheels of their in-  
vention, which are pronounced by those that have  
used them, a superior article, and the demand for  
them has met the most sanguine expectations of the  
inventors. Being made of a superior quality of  
Charcoal Iron, they are warranted equal to any  
manufacture.We would refer Railroad Companies and others  
to the following roads that have them in use. Hart-  
ford and New Haven, Connecticut River Railroad,  
Housatonic, Harlem, Farmington, and Stonington.  
**SIZER & CO.**  
Springfield, Mass.

January 29, 1848. if

**RAILROAD IRON AND LOCOMOTIVE  
Tyres imported to order and constantly on hand**

Mar. 20th

A. & G. RALSTON  
4 South Front St., Philadelphia.**TO MACHINISTS & MANUFACTURERS.**The Subscribers have taken the **READING  
CAR AXLE MANUFACTORY**—and are prepa-  
red to execute orders for *Axles of every description*, and  
Wrought Iron Shafts for Steamboats, Mills, etc.,  
made from superior material, at short notice. Ad-  
dress **Reading, Pa.****ANDREW TAYLOR & CO.**

August 5, 1848—3m\*

**RAILROAD IRON—SHEET IRON—  
BRASIER'S RODS—HOOPS—SCROLL  
—BANK'S BEST—& OTHER GOOD MAKES  
OF ENGLISH IRON.****100 Tons Railroad Iron**—Staffordshire make—  
56 pounds per yard—shipped from Liverpool 20th  
July, expected to land on wharf from 10th to 20th  
September.Also have Invoices of Sheet Iron, Brasier's Rods,  
Hoops, Scroll, and Band Iron, Banks best, and other  
good makes of English Rolled Iron, to arrive,  
suitable for Railroad Axles, etc., etc., equal in qua-  
lity to American Rolled Iron. I have agency of se-  
veral best makers in England and Wales, and can  
import for Railroad Companies, and others, on best  
terms, and at much less prices than they can be sup-  
plied from American Mills.**DAVID W. WETMORE,**

218 Water street.

New York, Sept. 9, 1848.

**MATTEWAN MACHINE WORKS.****THE MATTEWAN COMPANY HAVE**  
added to their Machine Works, an extensive  
Locomotive Engine department, and are prepared  
to execute orders for *Locomotive Engines* of every  
size and pattern—also, *Tenders, Wheels, Axles*, and  
other Railroad Machinery, to which they ask the at-  
tention of those who wish such articles, before they  
purchase elsewhere.**STATIONARY ENGINES, BOILERS, ETC.**  
Of any required size or pattern, arranged for driv-  
ing *Cotton, Woollen, or other Mills*, can be had on  
favorable terms, and at short notice.**COTTON AND WOOLLEN MACHINERY.**  
Of every description, embodying all the modern im-  
provements, second in quality to none in this or any  
other country, made to order.**MILL GEARING.**Of every description, may be had at short notice, as  
this company has probably the most extensive as-  
sortment of patterns in this line, in any section of  
the country, and are constantly adding to them.**TOOLS.***Turning Lathes, Slabbing, Planing, Cutting, and  
Drilling Machines*, of the most approved patterns,  
together with all other tools required in machine  
shops, may be had at the Mattewan Company's  
Shops, Fishkill Landing, or at39 Pine Street, New York.  
**WM. B. LEONARD, Agent.****FAIRBANKS' RAILROAD SCALES.****THE SUBSCRIBERS ARE PREPARED TO CONSTRUCT AT SHORT**  
notice, *Railroad and Depot Scales*, of any desired  
length and capacity. Their long experience as ma-  
nufacturers—their improvements in the construction  
of the various modifications, having reference to  
strength, durability, retention of adjustment, accu-  
racy of weight and despatch in weighing—and the  
long and severe tests to which their scales have been  
subjected—combine to ensure for these scales the uni-  
versal confidence of the public.No other scales are so extensively used upon Rail-  
roads, either in the United States or Great Britain;  
and the manufacturers refer with confidence to the  
following in the United States.Eastern Railroad, Boston and Maine R. R.,  
Providence Railroad, Providence & Wor. R.R.,  
Western Railroad, Concord R. R.,  
Old Colony Railroad, Fitchburg R. R.,  
Schenectady Railroad, Syracuse and Utica R. R.,  
Baltimore & Ohio Road, Baltimore & Susq. R. R.,  
Phila. & Reading Road, Schuylkill Valley R. R.,  
Central (Ga.) Railroad, Macon and Western R.R.,  
New York and Erie Railroad;and other principal Railroads in the Western, Mid-  
dle and Southern States.**E. & F. FAIRBANKS & CO.**

St. Johnsbury, Vt.

Agents { **FAIRBANKS & CO.**, 81 Water st. N. York.  
A. B. NORRIS, 196 Market st., Philad.

April 22, 1848.

ly\*17

**PATENT HAMMERED RAILROAD, SHIP**and Boat Spikes. The Albany Iron and Nail  
Works have always on hand, of their own manufac-  
ture, a large assortment of Railroad, Ship and Boat  
Spikes, from 2 to 19 inches in length, and of any form  
of head. From the excellence of the material al-  
ways used in their manufacture, and their very gen-  
eral use for railroads and other purposes in this coun-  
try, the manufacturers have no hesitation in warrant-  
ing them fully equal to the best spikes in market,  
both as to quality and appearance. All orders ad-  
dressed to the subscriber at the works, will be prompt-  
ly executed. **JOHN F. WINSLOW, Agent.**

Albany Iron and Nail Works, Troy, N. Y.

The above spikes may be had at factory prices, of  
Erastus Corning & Co., Albany; Hart & Merritt,  
New York; J. H. Whitney, do.; E. J. Eting, Phila-  
delphia; Wm. E. Coffin & Co., Boston. ja45**RAILROAD IRON.****THE NEW JERSEY IRON CO.'S WORKS,**  
at Boonton, are now in full operation, and can  
execute orders for Railroad Bars of any required  
pattern, equal in quality to any made in this coun-  
try. Apply to **DUDLEY B. FULLER, Ag't**  
139 Greenwich Street.

New York, October 25, 1848.

**CHILLED RAILROAD WHEELS.**—**THE**  
undersigned are now prepared to manufacture  
their Improved Corrugated Car Wheels, or Wheels  
with any form of Spokes or Disks, by a new process  
which prevents all strain on the metal, such as it  
is produced in all other chilled wheels, by the man-  
ner of casting and cooling. By this new method of  
manufacture, the hubs of all kinds of wheels may  
be made whole—that is, without dividing them into  
sections—thus rendering the expense of banding un-  
necessary; and the wheels subjected to this process  
will be much stronger than those of the same size  
and weight, when made in the ordinary way.**A. WHITNEY & SON,**

Willow St. below 13th,

Nov. 10, 1847. [if.]

Philadelphia, Penna.

**THE SUBSCRI-**  
ber has on hand  
a good assortment  
of his best Leveling and  
Surveying Instru-  
ments, among them  
his improved Com-  
pass for taking angles  
without the needle—  
also Bells, suitable  
for Churches, Rail-  
road Depots, etc.**ANDREW MENEELY.**

West Troy, May 12, 1847.

ly\*21

**PATENT RAILROAD, SHIP AND BOAT**Spikes. The Troy Iron and Nail Factory keeps  
constantly for sale a very extensive assortment of  
Wrought Spikes and Nails, from 3 to 10 inches,  
manufactured by the subscriber's Patent Machinery,  
which after five years' successful operation, and now  
almost universal use in the United States (as well  
as England, where the subscriber obtained a patent)  
are found superior to any ever offered in market.Railroad companies may be supplied with Spikes  
having countersink heads suitable to holes in iron  
rails, to any amount and on short notice. Almost  
all the railroads now in progress in the United States  
are fastened with Spikes made at the above named  
factory—for which purpose they are found invalua-  
ble, as their adhesion is more than double any com-  
mon spikes made by the hammer.All orders directed to the Agent, Troy, N. York  
will be punctually attended to.**HENRY BURDEN, Agent**Spikes are kept for sale, at Factory Prices, by  
& J. Townsend, Albany, and the principal Iron mer-  
chants in Albany and Troy; J. I. Brower, 222 Water  
St., New York; A. M. Jones, Philadelphia; T. Jar-  
viers, Baltimore; Degrand & Smith, Boston.Railroad Companies would do well to forward  
their orders as early as practicable, as the subscriber  
is desirous of extending the manufacturing so as to  
keep pace with the daily increasing demand.  
ja45**TO LOCOMOTIVE AND MARINE EN-**gine Boiler Builders. Pascal Iron Works,  
Philadelphia. Welded Wrought Iron Flues, suit-  
able for Locomotives, Marine and other Steam En-  
gine Boilers, from 2 to 5 inches in diameter. Also,  
Pipes for Gas, Steam and other purposes; extra  
strong Tube for Hydraulic Presses; Hollow Pis-  
tons for Pumps of Steam Engines, etc. Manufact-  
ured and for sale by**MORRIS TASKER & MORRIS,**Warehouse S. E. corner 3d and Walnut Sts., Phila-  
delphia. 11**CHILLED RAILROAD WHEELS.**—**THE**  
undersigned, the *Original Inventor of the Plate  
Wheel* with solid hub, is prepared to execute all or-  
ders for the same, promptly and faithfully, and sol-  
icits a share of the patronage for those kind of wheels  
which are now so much preferred, and which he ori-  
ginally produced after a large expenditure of time  
and money.**A. TIERS.**

Point Pleasant Foundry,

He also offers to furnish Rolling Mill Castings,  
and other Mill Gearing, with promptness, having,  
he believes, the largest stock of such patterns to be  
found in the country.**A. T.**

Kensington, Philadelphia Co.,

March 12, 1848.



# **NORWICH CAR FACTORY, NORWICH, CONNECTICUT.**

At the head of navigation on the River Thames, and on the line of the *Norwich and Worcester Railroad*, established for the manufacture of

## **RAILROAD CARS,**

OF EVERY DESCRIPTION, VIZ:  
PASSENGER, FREIGHT AND HAND CARS,

ALSO, VARIOUS KINDS OF  
ENGINE TENDERS AND SNOW PLOUGHS,  
TRUCKS, WHEELS & AXLES

Furnished and fitted at short notice.

Orders executed with promptness and despatch.

Any communication addressed to

**JAMES D. MOWRY,**

General Agent,

Norwich, Conn.,

Will meet with immediate attention.

175

# **MANUFACTURE OF PATENT WIRE**

Rope and Cables for Inclined Planes, Standing Ship Rigging, Mines, Cranes, Tilters etc., by  
**JOHN A. ROEBLING, Civil Engineer,**  
Pittsburgh, Pa.

These Ropes are in successful operation on the planes of the Portage Railroad in Pennsylvania, on the Public Slips, on Ferries and in Mines. The first rope put upon Plane No. 3, Portage Railroad, has now run 4 seasons, and is still in good condition.

92/17

# **NICOLL'S PATENT SAFETY SWITCH**

for Railroad Turnouts. This invention, for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design.

It acts independently of the main track rails, being laid down, or removed, without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two Castings and two Rails; the latter, even if much worn or used, not objectionable.

Working Models of the Safety Switch may be seen at Messrs. Davenport and Bridges, Cambridgeport, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained on application to the Subscriber, Inventor, and Patentee  
**G. A. NICOLLS,**  
Reading, Pa.

ja45

# **TO RAILROAD COMPANIES AND BUILDERS OF MARINE AND LOCOMOTIVE ENGINES AND BOILERS.**

## **PASCAL IRON WORKS.**

### **WELDED WROUGHT IRON TUBES**

From 4 inches to 1 in. diameter and 2 to 12 feet long, capable of sustaining pressure from 400 to 2500 lbs. per square inch, with Stop Cocks, T. L., and other fixtures to suit, fitting together with screw joints, suitable for STEAM, WATER, GAS, and for LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by

**MORRIS, TASKER & MORRIS,**

Warehouse S. E. Corner of Third & Walnut Streets,

PHILADELPHIA.

# **LAWRENCE'S ROSENDALE HYDRAULIC CEMENT.**

This cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

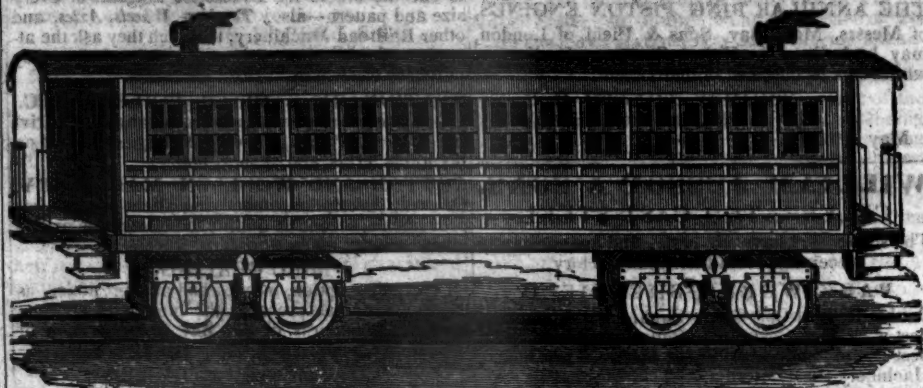
For sale in lots to suit purchasers, in tight paper barrels, by  
**JOHN W. LAWRENCE,**

149 Front street, New York.

Orders for the above will be received and promptly attended to at this office.

32 17

# **DAVENPORT & BRIDGES, CAR WORKS, CAMBRIDGEPORT, MASS.**



Manufacture to Order, Passenger and Freight Cars of every description, and of the most improved pattern; also furnish Snow Ploughs and Chilled Wheels of any pattern and size. Forged Axles, Springs, Boxes and Bolts for Cars at the lowest prices.

All orders punctually executed and forwarded to any part of the country.

Our Works are within fifteen minutes ride from State street, Boston—Omnibuses pass every fifteen minutes.

106

**THE SUBSCRIBERS ARE PREPARED TO** execute orders at their Phoenix Works for Railroad Iron of any required pattern, equal in quality and finish to the best imported.

**REEVES, BUCK & CO.,**

Philadelphia.

**ROBERT NICHOLS, Agent,**

No. 79 Water St., New York.

## **RAILROAD IRON, PIG IRON, ETC.**

600 Tons of T Rail 60 lbs. per yard.

25 Tons of 2 1/2 by 1 Flat Bars.

25 Tons of 2 1/2 by 9-16 Flat Bars.

100 Tons No. 1 Gaitshorrie.

100 Tons Welsh Forge Pigs.

For Sale by **A. & G. RALSTON & CO.**

No. 4 So. Front St., Philadelphia

## **FRENCH AND BAIRD'S PATENT SPARK ARRESTER.**

**TO THOSE INTERESTED IN** Railroads, Railroad Directors and Managers are respectfully invited to examine an improved Spark Arrester recently patented by the undersigned.

Our improved Spark Arresters have been extensively used during the last year on both passenger & freight engines, and have been brought to such a state of perfection that no annoyance from sparks or dust from the chimney of engines on which they are used is experienced.

These Arresters are constructed on

an entirely different principle from any heretofore offered to the public. The form is such that a rotary motion is imparted to the heated air, smoke and sparks passing through the chimney, and by the centrifugal force thus acquired by the sparks and dust they are separated from the smoke and steam, and thrown into an outer chamber of the chimney through openings near its top, from whence they fall by their own gravity to the bottom of this chamber; the smoke and steam passing off at the top of the chimney, through a capacious and unobstructed passage, thus arresting the sparks without impairing the power of the engine by diminishing the draught or activity of the fire in the furnace.

These chimneys and arresters are simple, durable and neat in appearance. They are now in use on the following roads, to the managers and other officers of which we are at liberty to refer those who may desire to purchase or obtain further information in regard to their merits.

R. L. Stevens, President Camden and Amboy Railroad Company; Richard Peters, Superintendent Georgia Railroad, Augusta, Ga.; G. A. Nicolls, Superintendent Philadelphia, Reading and Pottsville Railroad, Reading, Pa.; W. E. Morris, President Philadelphia, Germantown and Norristown Railroad Company, Philadelphia; E. B. Dudley, President W. and R. Railroad Company, Wilmington, N. C.; Col. James Gadsden, President S. C. and C. Railroad Company, Charleston, S. C.; W. C. Walker, Agent Vicksburg and Jackson Railroad, Vicksburg, Miss.; R. S. Van Rensselaer, Engineer and Sup't Hartford and New Haven Railroad; W. R. M'Kee, Sup't Lexington and Ohio Railroad, Lexington, Ky.; T. L. Smith, Sup't New Jersey Railroad Trans. Co.; J. Elliott, Sup't Motive Power Philadelphia and Wilmington Railroad, Wilmington, Del.; J. O. Sterna, Sup't Elizabethtown and Somerville Railroad; R. R. Cuyler, President Central Railroad Company, Savannah, Ga.; J. D. Gray, Sup't Macon Railroad, Macon, Ga.; J. H. Cleveland, Sup't Southern Railroad, Monroe, Mich.; M. F. Chittenden, Sup't M. P. Central Railroad, Detroit, Mich.; G. B. Fisk, President Long Island Railroad, Brooklyn.

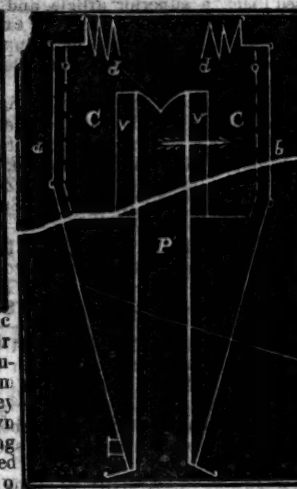
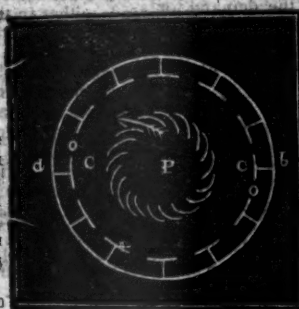
Orders for these Chimneys and Arresters, addressed to the subscribers, care Messrs. Baldwin & Whitney, of this city, will be promptly executed.

N. B.—The subscribers will dispose of single rights, or rights for one or more States, on reasonable terms.

Philadelphia, Pa., April 6, 1844.

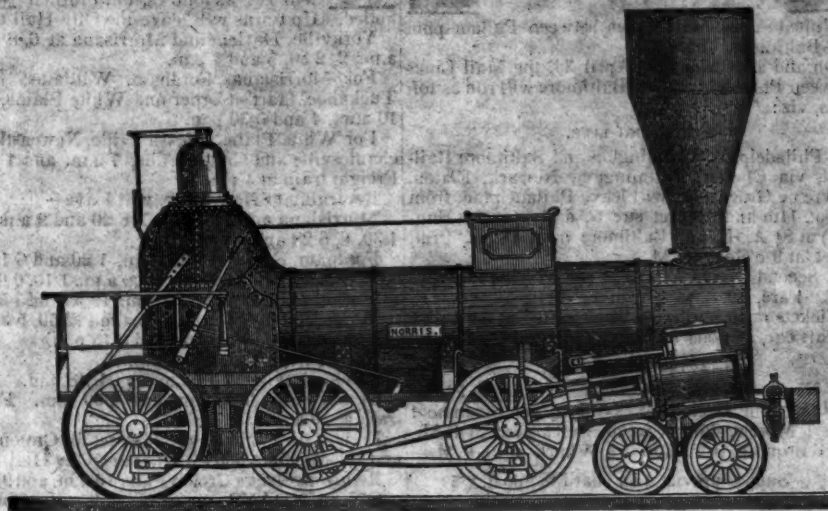
The letters in the figures refer to the article given in the Journal of June, 1844.

ja45





# NORRIS' LOCOMOTIVE WORKS. BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA.



**THE UNDERSIGNED** Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish. Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality. Iron and Brass castings, Axles, etc., fitted up complete with Tracks or otherwise.

NORRIS' BROTHERS.

**MACHINE WORKS OF ROGERS,** Ketchum & Grosvenor, Paterson, N. J. The undersigned receive orders for the following articles, manufactured by them of the most superior description in every particular. Their works being extensive and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch.

## Railroad Work.

Locomotive steam engines and tenders; Driving and other locomotive wheels, axles, springs & flange tires; car wheels of cast iron, from a variety of patterns, and chills; car wheels of cast iron with wrought tires; axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and Millwright work generally; hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR, Paterson, N. J., or 60 Wall street, N. York.

**PIG AND BLOOM IRON.**—THE SUBSCRIBERS are agents for the sale of numerous brands of Charcoal and Anthracite Pig Iron, suitable for Machinery, Railroad Wheels, Chains, Hollowware, etc. Also several brands of the best Puddling Iron, Laminated Blooms suitable for Wire, Boiler Plate, Axe Iron, Shovels, etc. The attention of those engaged in the manufacture of Iron is solicited by

A. WRIGHT & NEPHEW,  
Vine St. Wharf, Philadelphia.

**T. & C. WASON,** Manufacturers of every style of Freight and Baggage Cars. Forty rods east of the depot, Springfield, Mass.

Running parts in sets complete, Wheels, Axles, or any part of cars furnished and fitted up at short notice and in the best manner.

N. B. Particular attention paid to the manufacture of the most improved Freight Cars. We refer to the New Haven, Hartford and Springfield; Connecticut River; Harlem; Housatonic; and Western, Mass., Railroads, where our cars are now in constant use.

Dec. 25, 1847.—1y.

**SPRING STEEL FOR LOCOMOTIVES,** Tenders and Cars. The Subscriber is engaged in manufacturing Spring Steel from 14 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used, its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address

JOAN F. WINSLOW, Agent,  
Albany Iron and Nail Works,

**IMPORTANT TO ENGINEERS, CONTRACTORS, and SURVEYORS.**—The Engineer's, Contractor's and Surveyor's Pocket Table Book, by J. M. Scribner, A. M., 264 pages, 24 mo; tuck binding, with gilt edge. Published by Huntington & Savage, 216 Pearl street, New York.

The above work comprises Logarithms of Numbers, Logarithmic Sines and Tangents, Natural Sines and Natural Tangents; the Traverse Table, and a full and extensive set of tables, exhibiting at one view the number of cubic yards contained in any embankment or cutting, and for any case or slope of sides usual in practice. Besides these essential tables, the work comprises 60 pages more of Mensuration, Tables, Weights of Iron, Strength of Materials, Formulas, Diagrams, etc., for laying out railroads, canals and curves; much of which has never before been offered to the public, and all dispensable to the engineer. This book will prove a great saving of time, and will enable the new beginner to furnish results as accurately (and with much greater rapidity) as the most experienced in the profession without its aid. The tables of Logarithms, etc., have been carefully corrected and compared with different editions of the same tables; and all the tables throughout the book have been read carefully by proofs four times; hence the most implicit confidence may be placed in their correctness.

Also, *Scribner's Engineer's and Mechanic's Companion*, new edition, 264 pages, enlarged, with 35 pages of entirely new matter, and much improved throughout.

It is believed these books are so well adapted to suit the above professions, that they cannot afford to do without them, and that they will aid in rewarding well directed mental labor.

Both are for sale by all the principal booksellers throughout the United States and Canada.

**WESTERN RAILROAD.**—ON AND AFTER Monday, April 5, 1847, the passenger

trains will leave daily, Sundays excepted, as follows:

Boston at 8 a. m. and 4 p. m. for Albany.  
Albany at 7 1-4 a. m. and 5 p. m. for Boston.  
Springfield at 8 1-2 a. m. and 1 p. m. for Albany.  
Springfield at 8 1-2 a. m. and 1 1-2 and 3 p. m. (on arrival of the train from New York) for Boston.  
Day line to New York, via Springfield.—The steamboat train leaves Boston at 6 a. m., and arrives in New York at 7 p. m., by the steamboats Traveler, New York, or Champion. Returning, leaves New York at 6 1-4 a. m., and arrives in Boston at 7 p. m.

Night line to New York.—Leaves Boston at 11 p. m., and arrives in New York at 5 a. m.

Albany and Troy.—Leave Boston at 8 a. m., Springfield at 1 p. m., and arrive in Albany at 6 p. m.; or, leave Boston at 4 p. m., Springfield next morning at 8 1-2, and arrive in Albany at 1 1-2 p. m.

The Troy trains connect at Greenbush.

The trains for Buffalo leave at 7 a. m. and 7 p. m.

For Northampton, Greenfield, etc.—The trains of the Connecticut River Railroad leave Springfield at 8 1-4 a. m., 1 and 3 p. m., and passengers proceed directly on to Brattleboro', Windsor, Bellows Falls, Walpole, Hanover, Haverhill, etc.

For Hartford.—The trains leave Springfield on the arrival of the trains from Boston.

The trains of Pittsfield and North Adams Railroad leave Pittsfield on the arrival of the trains from Boston.

N. B.—No responsibility assumed for any baggage by the passenger trains, except for wearing apparel not exceeding the value of fifty dollars, unless by special agreement.

JAMES BARNES, Sup't and Eng'r,  
C. A. SEAD, Agent, 27 State street, Boston.



**GEORGIA RAILROAD. FROM AUGUSTA TO ATLANTA—171 MILES.**  
AND WESTERN AND ATLANTIC RAILROAD FROM ATLANTA TO DALTON, 100 MILES.

This Road in connection with the South Carolina Railroad and Western and Atlantic Railroad now forms a continuous line, 400 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga.—32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.		Between Augusta and Dalton.	Between Charleston and Dalton.
		271 miles.	408 miles.
1st class.	Boxes of Hats, Bonnets, and Furniture, per cubic foot.....	\$0 18	\$0 28
2d class.	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs and Confectionary, per 100 lbs.	1 00	1 50
3d class.	Sugar, Coffee, Liquor, Bagging, Rope, Cotton Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow Ware, Castings, Crockery, etc.	0 60	0 85
4th class.	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, etc.	0 40	0 65
	Cotton, per 100 lbs.....	0 45	0 75
	Molasses, per hogshead.....	8 50	13 50
	" " barrel.....	2 50	4 25
	Salt per bushel.....	0 18	
	Salt per Liverpool sack.....	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows, etc.	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Co. will be forwarded free of commissions. Freight payable at Dalton.

F. C. ARMS,

Sup't. of Transportation.

Augusta, Ga., July 15, 1847.

441v

**THE WESTERN AND ATLANTIC Railroad.**—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days, the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,

Chief Engineer.

Atlanta, Georgia, April 16th, 1846

1v1

**CENTRAL RAILROAD—FROM SAVANNAH TO MACON.** Distance 190 miles. This Road is open for the transportation of Passengers and Freight.

Freight. Rates of Passage, \$3 00. Freight—On weight goods generally... 50 cts. per hundred. On measurement goods... 13 cts. per cubic ft. On brls. wet (except molasses and oil)... \$1 50 per barrel. On brls. dry (except lime)... 80 cts. per barrel. On iron in pigs or bars, castings for mills, and unboxed machinery... 40 cts. per hundred. On hhd. and pipes of liquor, not over 120 gallons... \$5 00 per hhd. On molasses and oil... \$6 00 per hhd. Goods addressed to F. WINTER, Agent, forwarded free of commission. THOMAS PURSE, Gen'l. Sup't. Transportation.

**PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD.—1848.**

**SUMMER ARRANGEMENT.**

United States Mail Lines between Philadelphia and Baltimore. Fare, \$3.

On and after Monday, April 3d, the Mail Lines between Philadelphia and Baltimore will run as follows, viz:

**MORNING LINE.**

Per Philadelphia, Wilmington and Baltimore Railroad, via Chester, Wilmington, Newark, Elkton, Havre de Grace, etc., will leave Philadelphia, from Depot, 11th and Market streets, daily (except Sunday) at 8½ A.M., and Baltimore from Depot, Pratt street, at 9 o'clock, A.M.

A Second Class Car will be run with the morning line. Fare, \$2.

Tickets must positively be procured at the Office for this car, as none will be sold by the conductors.

**AFTERNOON LINE.**

Via Newcastle and Frenchtown, will leave Philadelphia, from Dock Street Wharf, per Steamboat Robert Morris, daily (except Sunday) at 2½ P.M., and Baltimore, from Bowly's Wharf, at 2½ P.M.

Supper provided on board the boat.

**NIGHT LINE.**

Per Philadelphia, Wilmington and Baltimore Railroad, will leave Philadelphia, from depot, 11th and Market streets, daily, at 11 P.M., and Baltimore at 8 P.M.

**WHEELING AND PITTSBURG.**

Tickets through to Wheeling or Pittsburg, can be procured at the depot, or on board of the steamboat. Fare to Wheeling, \$13. Fare to Pittsburg, \$12.

The trains leave Baltimore for the west at 7 A.M. and 4 P.M.

**SUNDAY MAIL LINE.**

The only line for Baltimore on Sunday leaves the depot, 11th and Market streets, at 10 P.M.

Passengers for these lines must procure their Tickets at the office before taking their seats in the cars.

**NOTICE.**—All Baggage by these lines is at its owner's risk, and passengers are expressly prohibited taking anything as baggage, except their wearing apparel. 50 lbs. baggage allowed each passenger.

**WILMINGTON ACCOMMODATION TRAINS.**

On and after Monday, April 3d, the Accommodation Trains, stopping at all the intermediate places between Philadelphia and Wilmington, will leave as follows, viz:

Leave Philadelphia, from depot 11th and Market streets, daily (Sundays excepted) at 1½ and 4 P.M. Leave Wilmington, from the depot, Water street, daily (except Sunday) at 7½ A.M. and 4½ P.M.

The Freight Accommodation Train will leave Philadelphia at 7 P.M. and Wilmington at 7 P.M.

The Mail Trains stopping at Chester and Wilmington, leave Philadelphia at 8½ A.M. and 10 P.M. Wilmington at 1 o'clock, P.M., and 12 midnight. Fare to Wilmington, 50 cts. Fare to Chester, 25 cts.

G. H. HUDDALL, Agent.

March 23, 1848.

1y15

**BOSTON AND PROVIDENCE RAILROAD.** On and after Monday, October 2d, the

Trains will run as follows:

Steamboat Train—Leaves Boston at 5 p.m.—Leaves Providence, on the arrival of the train from Stonington.

Accommodation Trains—Leave Boston at 8 a.m. and 3½ p.m. Leave Providence at 8½ a.m. and 3½ p.m.

Dedham Trains—Leave Boston at 9 a.m., 12 m., 3, 6, and 10½ p.m. Leave Dedham at 7½, 10½ a.m., 1½, 4½, and 9 p.m.

Stoughton Trains—Leave Boston at 11½ a.m. and 4½ p.m. Leave Stoughton at 8½ a.m. and 2½ p.m.

Freight Trains—Leave Boston at 11 a.m. and 6 p.m. Leave Providence at 4 a.m. and 7 40 a.m.

On and after Wednesday, Nov. 1, the DEDHAM TRAIN will run as follows: Leave Boston at 9 a.m., 12 m., 3, 5½ and 10½ p.m. Leave Dedham at 8 10½ a.m., 1½, 4½ and 9 p.m.

WM. RAYMOND LEE, Sup't.

**NEW YORK & HARLEM RAILROAD CO.—Summer Arrangement.—On and after**

Tuesday, June 1st, 1847, the cars

will run as follows, until further notice. Up trains will leave the City Hall for—

Yorkville, Harlem and Morrisana at 6, 8 and 11 a.m., 2, 2 30, 5 and 7 p.m.

For Morrisiana, Fordham, Williams' Bridge, Tuckahoe, Hart's Corner and White Plains, 7 and 10 a.m., 4 and 5 30 p.m.

For White Plains, Pleasantville, Newcastle, Mechanicsville and Croton Falls, 7 a.m. and 4 p.m. Freight train at 1 p.m.

Returning to New York, will leave—Morrisiana and Harlem, 7, 8 20 and 9 a.m., 1, 3, 4 30, 6, 6 25 and 8 p.m.

Fordham, 8 05 and 9 15 a.m., 1 20 and 6 15 p.m. Williams Bridge, 8 and 9 08 a.m., 1 10, 6 08 p.m.

Tuckahoe, 7 35 and 8 25 a.m., 12 55 and 5 53 p.m. White Plains, 7 10 and 8 35 a.m., 12 50, 5 35 p.m.

Pleasantville, 8 15 a.m. and 5 15 p.m. Newcastle, 8 a.m. and 5 p.m.

Mechanicsville, 7 48 a.m. and 4 48 p.m. Croton Falls, 7 30 a.m. and 4 30 p.m. Freight train at 10 a.m.

Freight train will leave 32d street for Croton Falls and intermediate places, 4 a.m. and City Hall 1 p.m.

Returning, leave Croton Falls 10 a.m. and 9½ p.m.

**ON SUNDAYS,** the trains will run as follows: Leave City Hall for Croton Falls, 7 a.m., 4 p.m.

Croton Falls for City Hall, 7 30 a.m., 4 30 p.m. Leave City Hall for White Plains and intermediate places, 7 and 10 a.m., 4 and 5 30 p.m.

White Plains for City Hall, 7 10 and 8 35 a.m., 12 30 and 5 35 p.m.

Extra trains will be run to Harlem, Fordham and Williams Bridge on Sunday, when the weather is fine.

The trains to and from Croton Falls will not stop on N. York island, except at Broome st. and 32d st.

A car will precede each train 10 minutes to take up passengers in the city.

Fare from New York to Croton Falls and Somers \$1, to Mechanicsville 87½c., to Newcastle 75c., to Pleasantville 62½c., to White Plains 50c.

251f

**NORWICH AND WORCESTER RAILROAD. Winter Arrangement.—1848.**

Accommodation Trains daily, (Sundays excepted.)

Leave Norwich, at 6 a.m., 12 m. and 2½ p.m. Leave Worcester, at 6½ and 10 a.m., and 4½ p.m.

connecting with the trains of the Boston and Worcester and Providence and Worcester railroads.

New York & Boston Line. Railroad & Steamers. Leave New York and Boston, daily, Sundays excepted, at 5 p.m.—At New York from pier No. 1 N. River.—At Boston from corner Lincoln and Beach streets, opposite United States Hotel. The steamboat train stops only at Framingham, Worcester, Danielsonville and Norwich.

Freight Trains leave Norwich and Worcester daily, Sundays excepted.—From Worcester at 6½ a.m., from Norwich at 7 a.m.

Fares are Less when paid for Tickets than when paid in the Cars.

32 ly S. H. P. LEE, Jr., Sup't.

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

32 ly

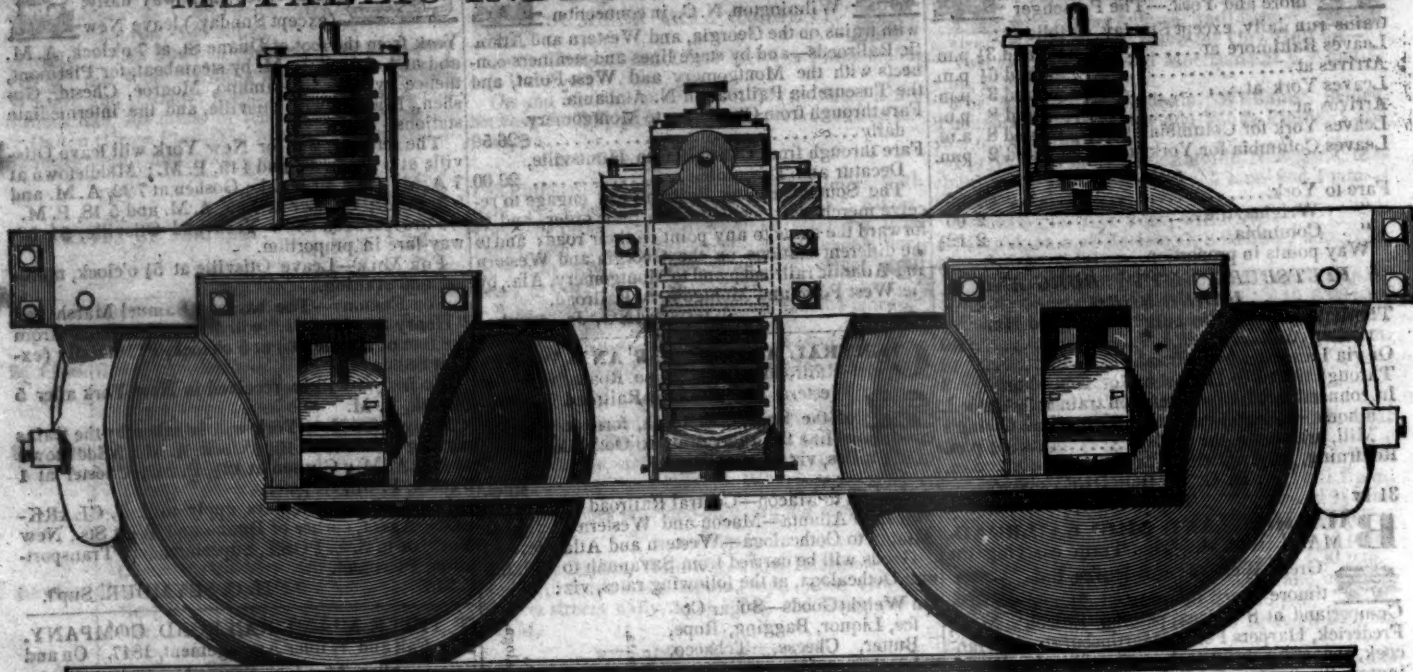
32 ly



100



# METALLIC INDIA RUBBER CAR SPRINGS.



**THE NEW ENGLAND CAR COMPANY** have introduced these Springs, and they are now in operation on every Railroad terminating in Boston, and several others in New England and the Middle States. Their qualities are well understood, or may be readily ascertained by every person interested to know them. They require no recommendation from the Company. The only known compound of India Rubber good for anything for this purpose is the Vulcanized India Rubber, invented by Charles Goodyear, of New Haven, and the application of it, and the form in which it is used, were invented by F. M. Ray, of New York. The right to manufacture and sell the substance itself for the purpose of Railroad Carriage Springs, as well as the form and application of it, are held exclusively by the New England Car Company. No other company, or individual, has any right to sell or use it for such purpose, or has attempted so to use it in this country.

The New England Car Company guarantee the right to use the article they sell for Railroad Carriage Springs only, against all adverse rights, whether under patents or otherwise; and all persons and corporations are cautioned against a similar use of the article, when purchased of any other parties.

The Springs they sell are all manufactured in a uniform manner, and under the immediate inspection of their own Agent, and have been proved and known to answer the purpose. None have been manufactured in this country or imported from abroad beside their own, which would at all answer the purpose; and if any such should be produced, it cannot be used for Car Springs, while Goodyear's patents, and the rights of the New England Car Company under them, remain in force.

The New England Car Company are now prepared to answer orders for all that may be called for, on reasonable notice, and uniform and equitable terms. They invite the most careful examination, and the severest scrutiny, into the merits of their Springs, wherever they have applied them. And if after such examination, your Company should judge it for their interest to adopt them, the N. E. Car Company would respectfully invite the patronage which they think they deserve, and are confident of receiving at your hands.

**EDWARD CRANE, Agent,**  
Office 99 State street.  
Orders may also be left with **WM. RIDER & BROTHERS, No. 58 Liberty street, New York,** or with **F. M. RAY, Agent,**  
100 Broadway, N. Y.

The following article, from the pen of Mr. HALE, the president of the Boston and Worcester railroad, expresses his opinion of this important improvement, as published in the Boston Daily Advertiser of June 7, 1848. He says:

"Of the numerous uses to which the wonderful elasticity and durability of India Rubber renders this material applicable, we are hardly aware of one in which it has been more successful than in forming springs for railroad cars. We have had occasion to observe, for some months past, its application to this use, on one of the passenger cars on the New-England special train of the Boston and Worcester railroad. It is there used, not only for the springs on which the car rests, but for the springs attached to the draw bar at each end of the car, to prevent any jar on the sudden advancement or interruption of the motion of the car. For both these purposes it appears to be admirably adapted, and we do not learn, that during the period in which it has been used, any defect in it has been discovered. It renders the movements of the car extremely easy, and protects it more effectually, we think, than any other spring which we have ever seen in use, from every harsh or unpleasant motion, either vertical or horizontal. It is simple in its form and application, extremely light, and little liable to get out of repair. During the period of some months, in which we have seen the springs in operation, there is no apparent wear or diminution of their efficiency."

The above statement of Mr. Hale agrees with my own observation in all particulars.

**WM. PARKER, Supt. B. & W. R. R.**  
June 8, 1848.

I fully concur in the foregoing statement, from practical observation of its use for the last 5 months, on the Boston and Worcester railroad corporation cars.

**D. N. PICKERING, Jr.,**  
Supt. Car Building B. & W. R. R.,  
Boston, June 10, 1848.

The New England Car Company have introduced their Vulcanized India Rubber Car Springs on the roads with which we are respectively connected, and we fully concur with Mr. Hale in the above opinion of their character and properties.

**DAVENPORT & BRIDGES, Car Builders,**  
**BRADLEY & RICE, Car Builders,**  
Boston, June, 1848.

**LAP-WELDED WROUGHT IRON TUBES** for Tubular Boilers, from 14 to 15 inches diameter, and any length not exceeding 17 feet—manufactured by the Caledonian Tube Company, Glasgow, and for sale by

**IRVING VAN WART,**  
12 Platt street, New York.  
**JOB CUTLER, Patentee.**

These Tubes are extensively used by the British Government, and by the principal Engineers and Steam Marine and Railway Companies in the Kingdom.

## AMERICAN RAILROAD JOURNAL.

OFFICE AT 48 SOUTH THIRD STREET,  
(Below Chestnut Street.)

**PHILADELPHIA, PA.**

This is the only periodical having a general circulation throughout the Union, in which all matters connected with public works can be brought to the notice of all persons in any way interested in these undertakings. Hence it offers peculiar advantages for advertising times of departure, rates of fare and freight, improvements in machinery, materials, as iron, timber, stone, cement, etc. It is also the best medium for advertising contracts, and placing the merits of new undertakings fairly before the public.

**TERMS.**—Five Dollars a year, in advance.

## RATES OF ADVERTISING.

One page per annum.....	\$125 00
One column ".....	50 00
One square ".....	15 00
One page per month.....	20 00
One column ".....	8 00
One square ".....	2 50
One page, single insertion.....	8 00
One column ".....	3 00
One square ".....	1 00
Professional notices per annum.....	5 00

**LETTERS and COMMUNICATIONS** for this Journal may be directed to the Editor,

**D. K. MINOR.**